# Energy, The Economy and The Environment

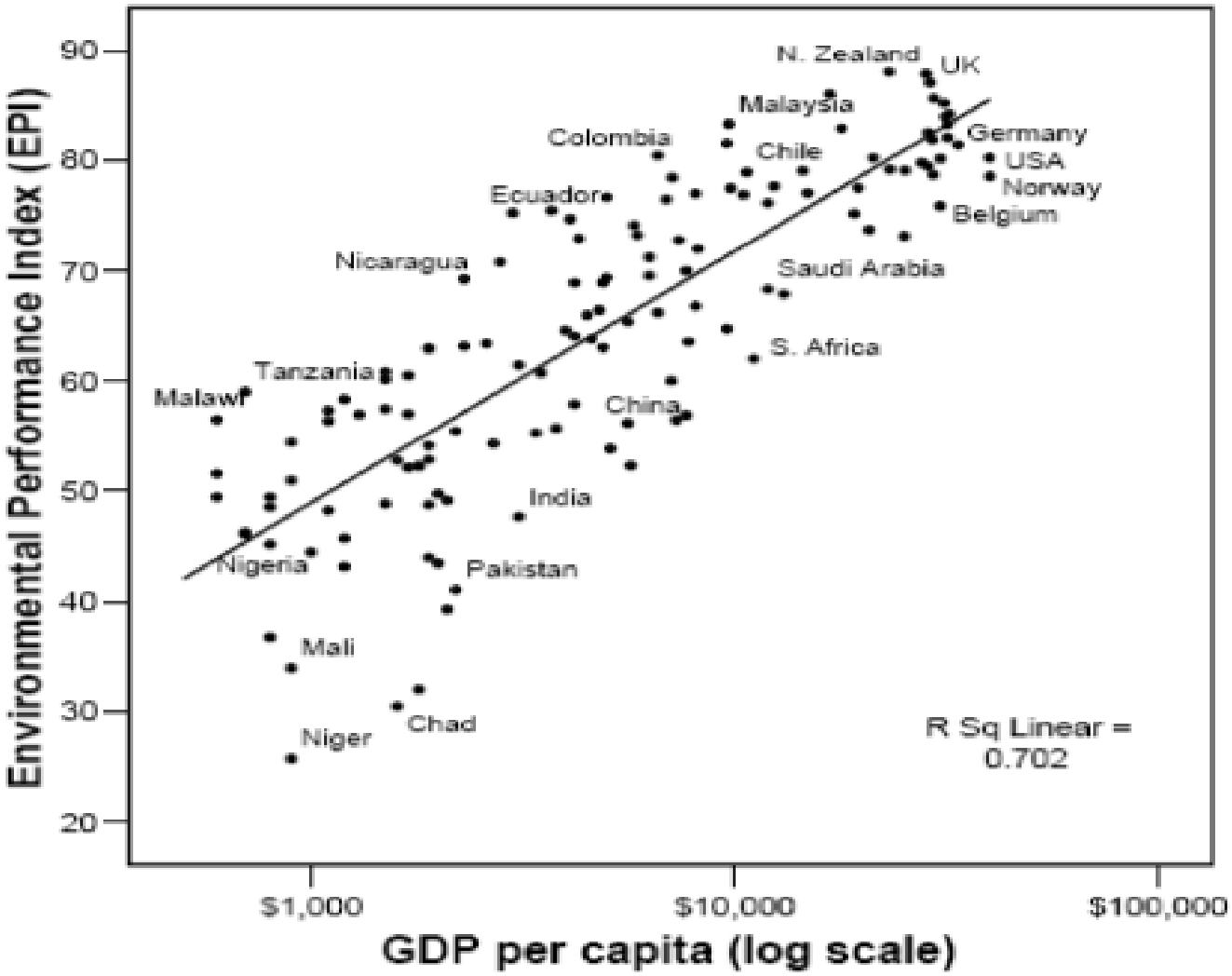
# Why is the Economy Important to the Environment?

# Pilot 2006 Environmental Performance Index

**Yale Center for Environmental Law & Policy**
Yale University

**Center for International Earth Science Information Network (CIESIN)**
Columbia University

http://www.yale.edu/epi/


Environmental Performance Index (EPI)
90
80
70
60
50
40
30
20
N. Zealand
UK
Malaysia
Colombia
Chile
Germany
USA
Norway
Belgium
Ecuador
Nicaragua
Saudi Arabia
S. Africa
Tanzania
Malawi
China
India
Nigeria
Pakistan
Mali
Chad
Niger
R Sq Linear = 0.702
$1,000
$10,000
$100,000
GDP per capita (log scale)

# Policy Implications of the 2012 EPI

- Wealth matters.
- The Environmental Health scores, in particular, reveal a significant relationship with GDP per capita.
- EPI scores more generally also correlate with wealth, although there is a diversity of performance within every level of economic development.

# Why Does Energy Matter?

- Without energy, life is brutal and short—think back to the cave man.
- Making energy more expensive is a regressive tax and an economic development inhibiter—the cost of energy influences the viability of every economic endeavor, but especially those that produce wealth.

# State Air Quality Status 2008 to 2010

# Summary

- Wealth is a significant driver of improved environmental quality.
- The cost of energy is a significant driver of wealth production.
- As we strive to improve the quality of our environment, we must be careful not to unnecessarily increase the cost of energy.

Ohio Environmental Protection Agency

# Ohio EPA

## Environmental Status/Recent Accomplishments

Ohio Environmental Protection Agency

# Omnibus Legislation (SB 294)

Introduced the Agency's Omnibus bill, S.B. 294, to address long-standing statutory fixes that will help reduce burden on the regulated community and improve timeliness while still ensuring environmental protection

Ohio Environmental Protection Agency

# Omnibus Legislation SB 294

## In-lieu Fee

The in-lieu fee proposal is an additional wetland and stream impact mitigation strategy. The intent is to a provide an additional mechanism to mitigate wetland and stream disturbances once avoidance measures are exhausted. The purpose is to increase the likelihood of mitigation successes in Ohio.

Ohio Environmental Protection Agency

# Omnibus Legislation SB 294

## Coal Combustion By-Products

Currently, coal combustion waste is exempt from disposal fees when the material is properly disposed in a municipal solid waste landfill. The proposal will exempt the material from solid waste management district generation fees and encourage the material to go to an existing landfill rather than having a generator create their own captive disposal site.

Ohio Environmental Protection Agency

# Omnibus Legislation SB 294

**OCAPP (Office of Compliance Assistance and Pollution Prevention)**

- Expand the confidentiality offered to businesses seeking compliance assistance.
- Establish a stewardship recognition program.

Ohio Environmental Protection Agency

# Omnibus Legislation SB 294

**Addressing Solid Waste, Infectious Waste and Hazardous Waste shortcomings in existing statute**

- Clarify payment of fees for asbestos disposal
- Increase the threshold for use of the scrap-tire fund
- Modify C&DD fees to encourage recycling
- Prohibit disposal of secondary aluminum waste at landfills
- Modify the infectious waste statute to remove dual regulation
- Revise environmental background requirements (SB 302)

Ohio Environmental Protection Agency

# Omnibus Legislation SB 294

## 404 Delegated Authority (Amendment)

OEPA is seeking statutory authority for Clean Water Act 404 delegation from USEPA. Currently, U.S. Army Corps of Engineers has the regulatory authority. The purpose is to streamline the permitting process, eliminate duplicity and increase the regulatory certainty.

Ohio Environmental Protection Agency

# General Permits

## Air

- Permitting approach for specific operations/activities
- Conditions are negotiated once with all interested parties and public noticed once
- Entities meeting qualifying criteria receive a GP within weeks
- Many GPs are currently available for a variety of air emission sources

Ohio Environmental Protection Agency

# General Permits

## Water/Waste Water

- General permits for storm water associated with construction and industrial activities.
- Wetland 401 water quality certifications for specific activities.

Ohio Environmental Protection Agency

# Expedited Enforcement

Retooled the agency's enforcement procedures to help expedite compliance through the use of additional notification and enforcement tools.

# KENTUCKY

# March 28, 2012

*To Protect and Enhance Kentucky's Environment*

Kentucky
UNBRIDLED SPIRIT™

# KY DEP Mission and Vision

## MISSION STATEMENT

To Protect and Enhance Kentucky's Environment

## VISION STATEMENT

The Department for Environmental Protection envisions a healthy and productive Commonwealth with balanced stewardship of the land, air and water. We envision a Commonwealth where future generations enjoy an environment as good or better than the present.

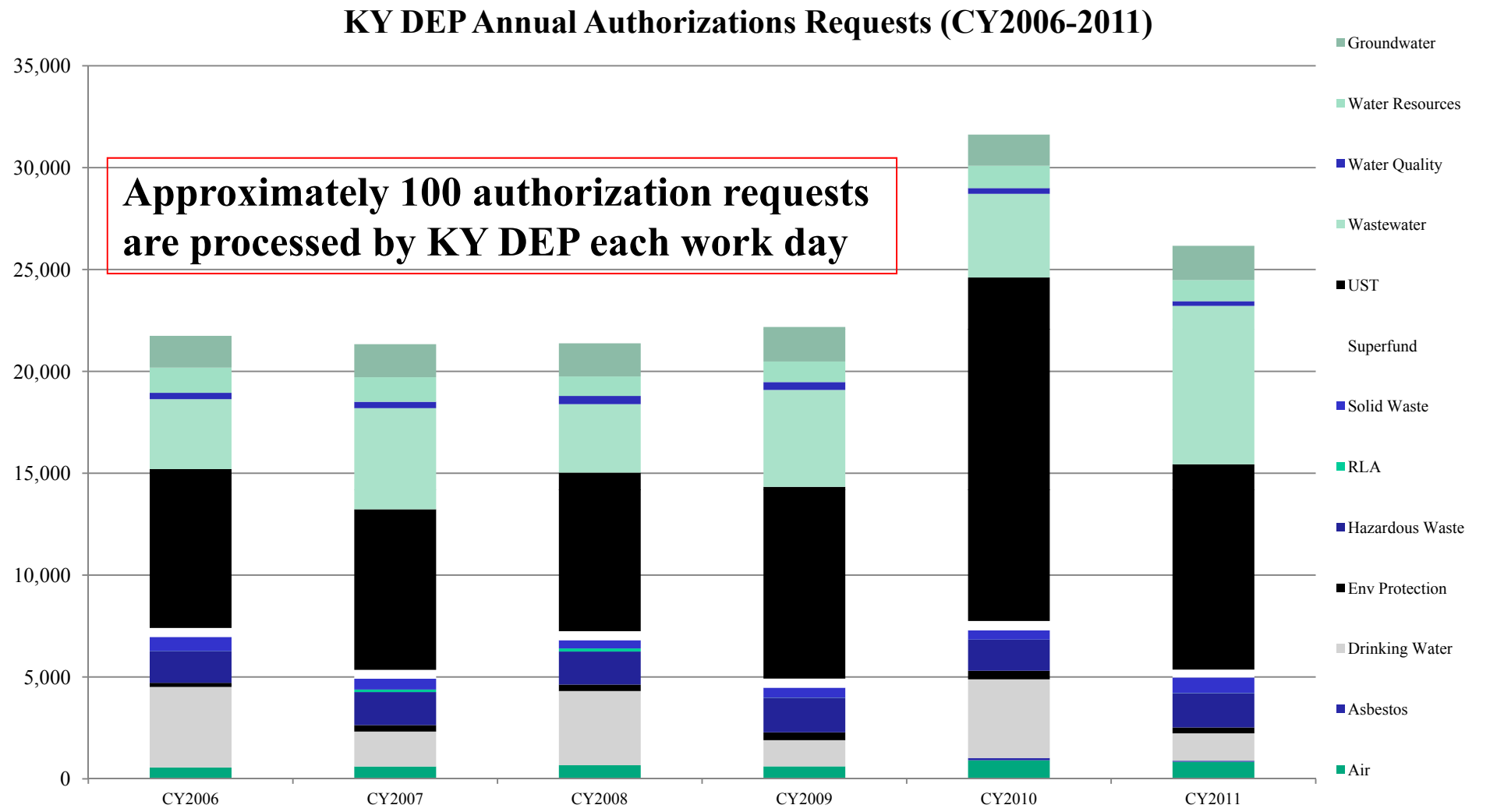
# KY DEP Core Agency Activities

- The department implements dozens of programs that are primarily modeled after federal environmental laws.
- The agency's core functions include:
  - Measuring environmental conditions
  - Setting protective standards
  - Ensuring acceptable performance
  - Correcting existing problems
- These functions are administered through the following activities:
  - Monitoring
  - Permitting
  - Inspections
  - Assistance
  - Remediation
  - Enforcement

# Implementation Challenges

- **SELECTED CHALLENGES:**
  1) Severe budget reductions – 32% GF reduction
  2) Substantially reduced staffing to 20-year low
  3) Significantly increased workload, complexity, and EPA oversight
  4) Litigation
- **KY DEP RESPONSE**: Despite the challenges, KY DEP is succeeding in achieving its mission, vision, and objectives and serving its customers

# DEP Authorization Requests (CY2006-CY2011)



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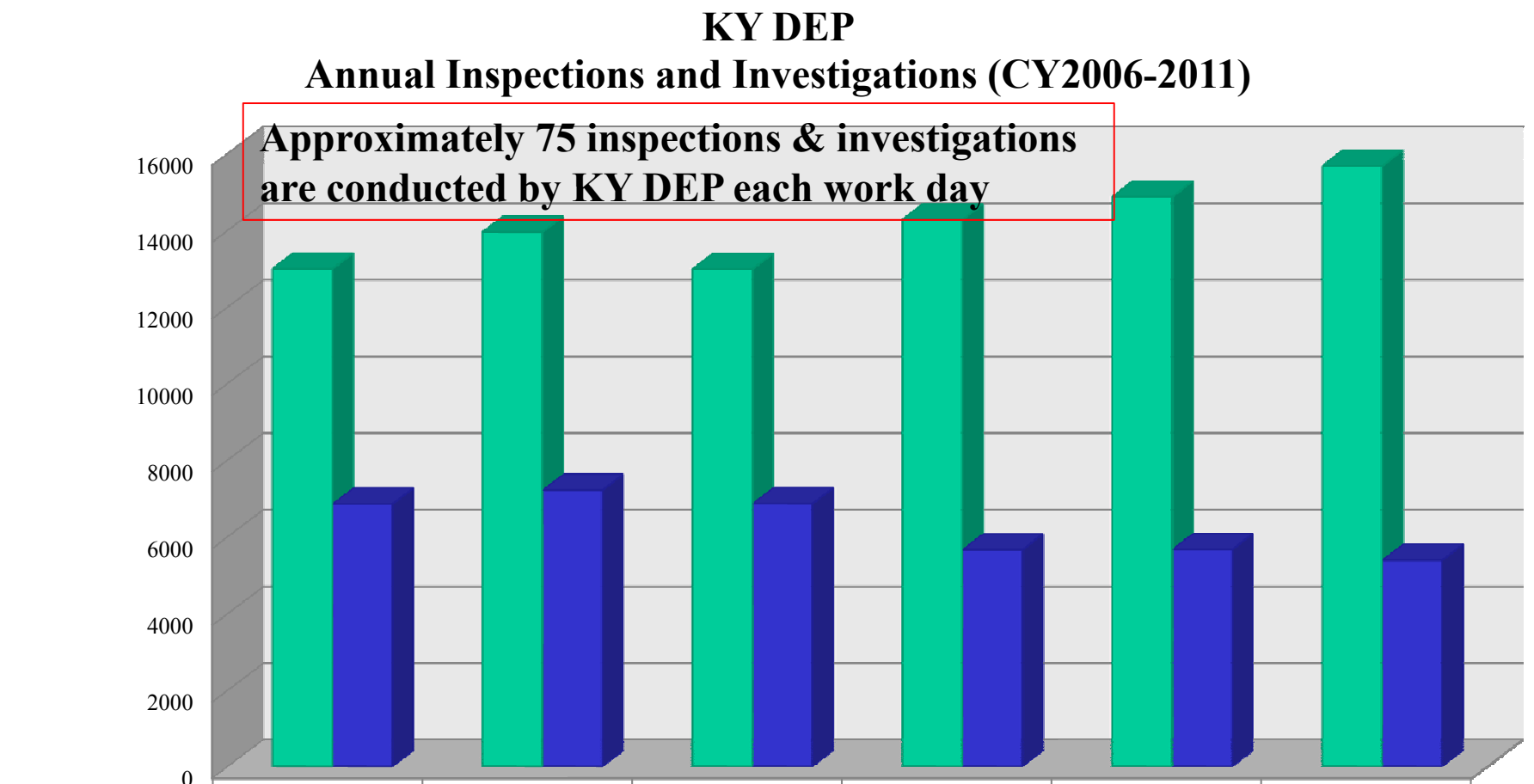
# DEP Inspections and Investigations (CY2006-CY2011)




| | CY2006 | CY2007 | CY2008 | CY2009 | CY2010 | CY2011 |
|---|---|---|---|---|---|---|
| DEP Inspections | 13002 | 13961 | 12993 | 14283 | 14878 | 15671 |
| DEP Investigations | 6854 | 7216 | 6862 | 5666 | 5673 | 5397 |

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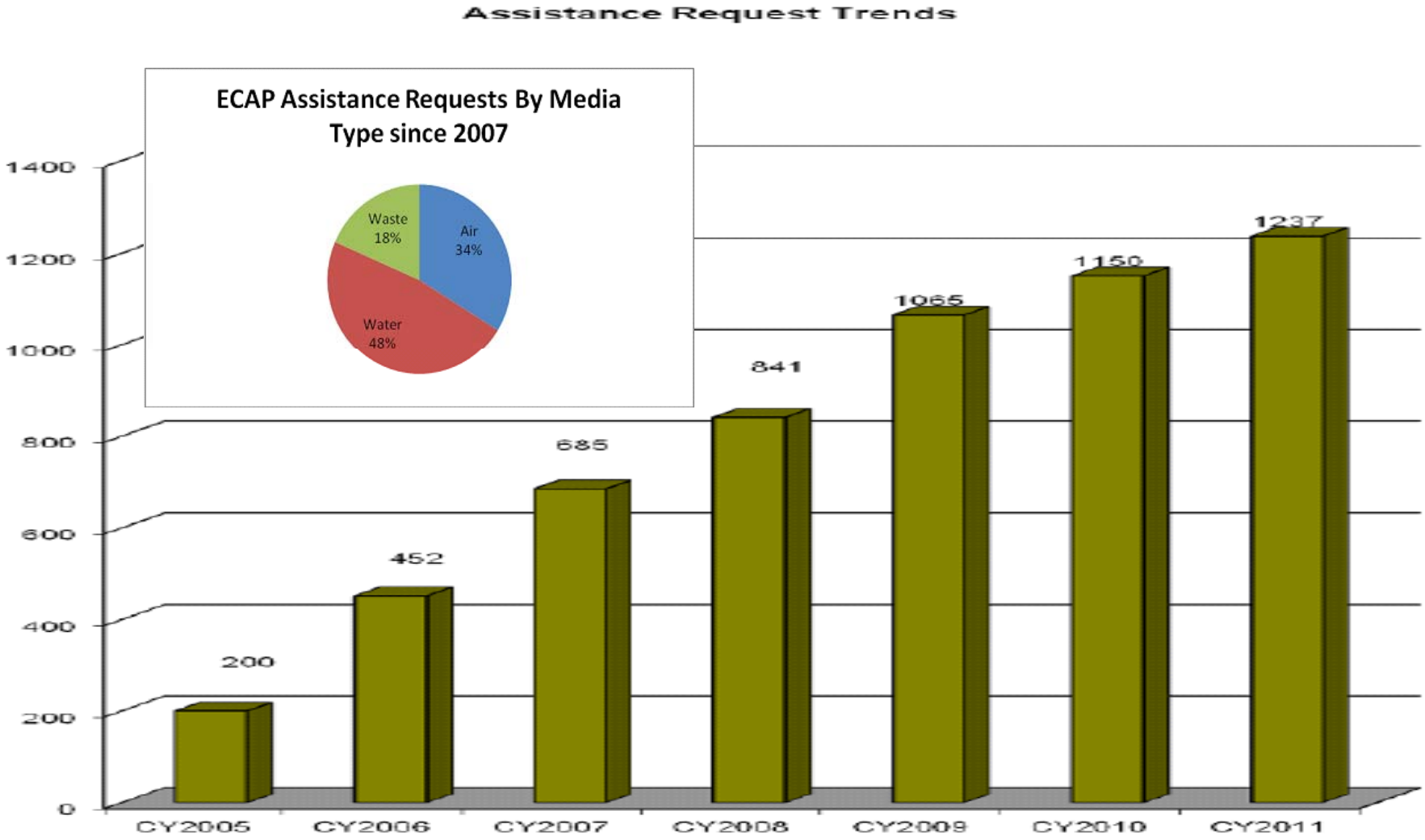
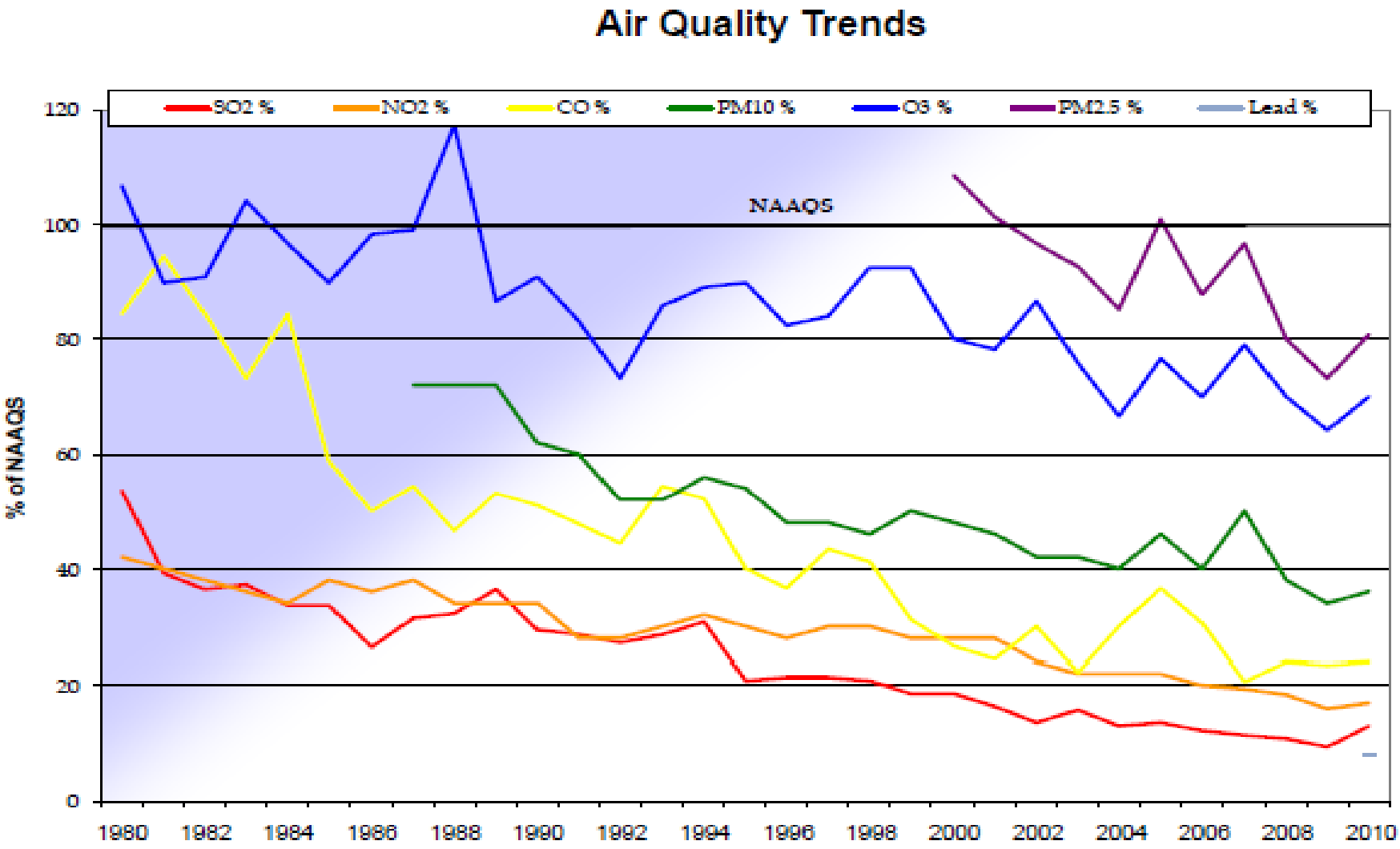
# Compliance Assistance



# Clean Air – continuous improvement



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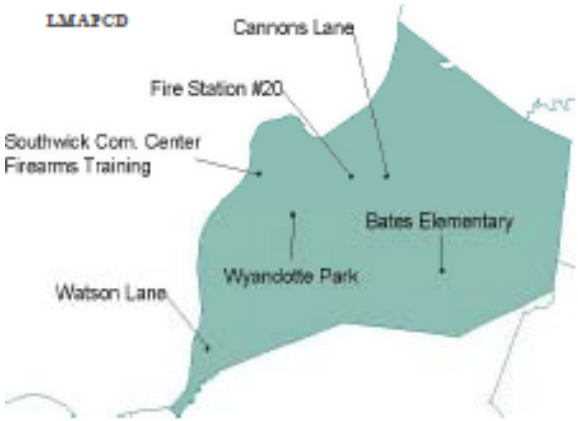
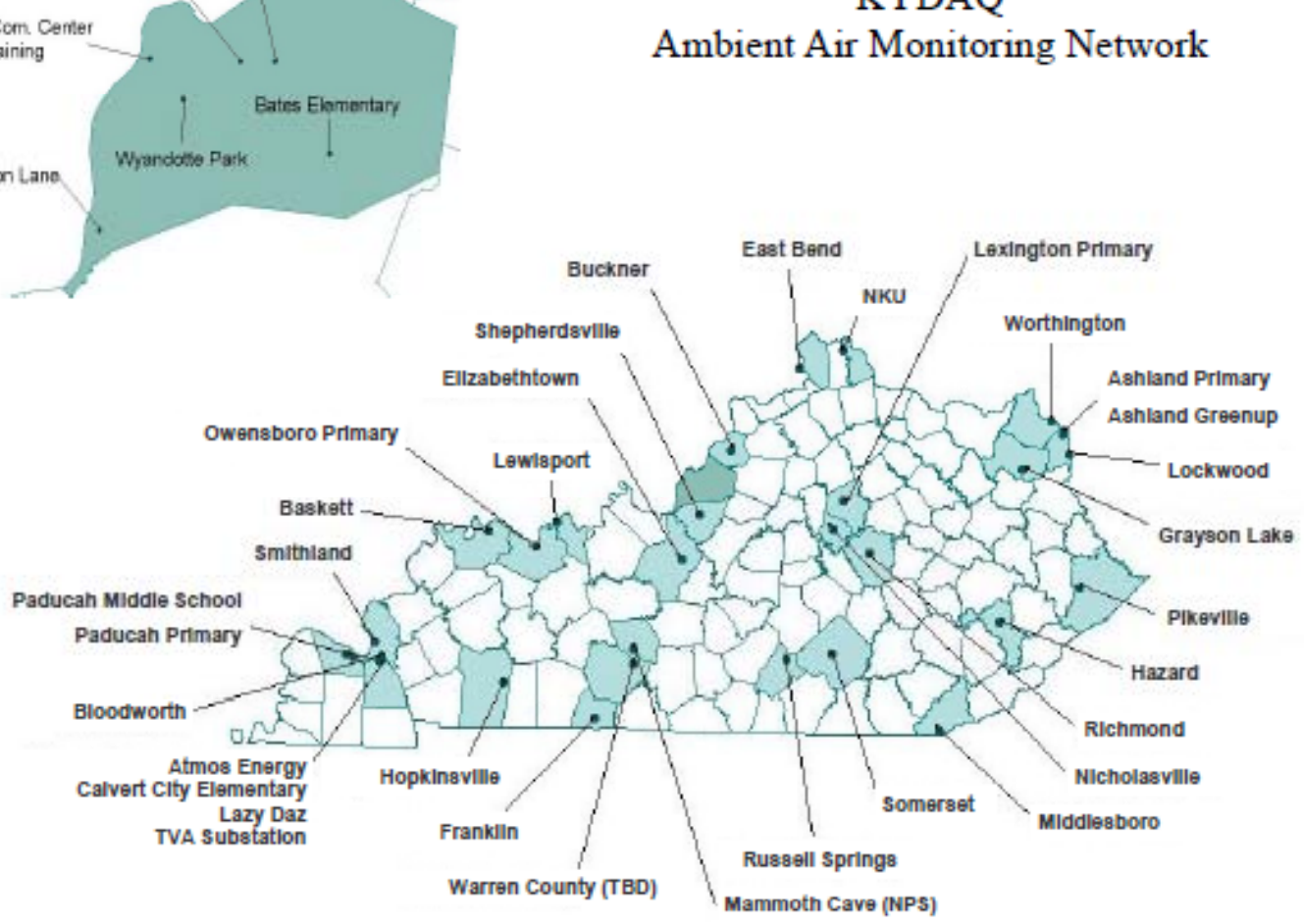
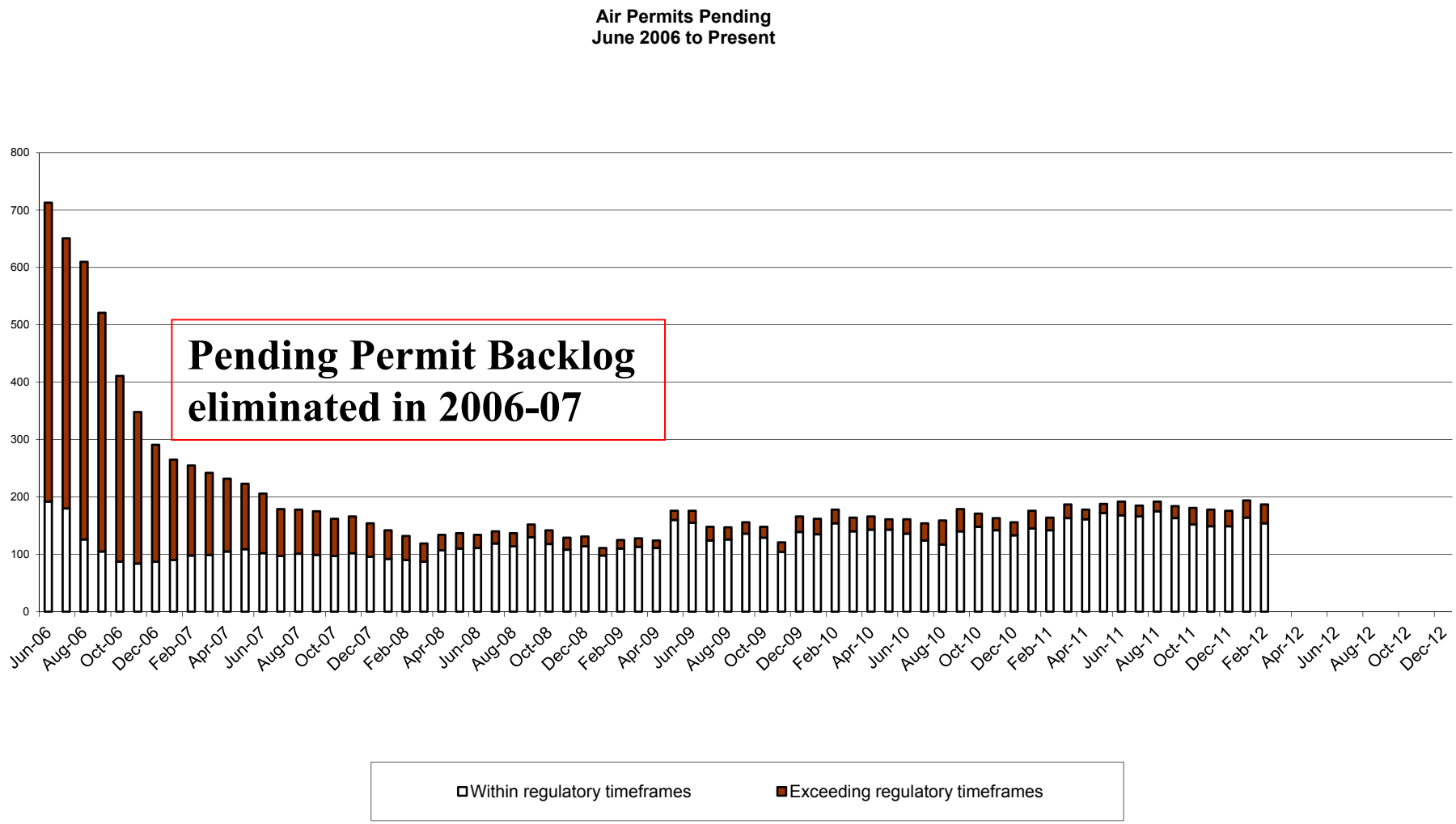
# All monitors complying with NAAQS

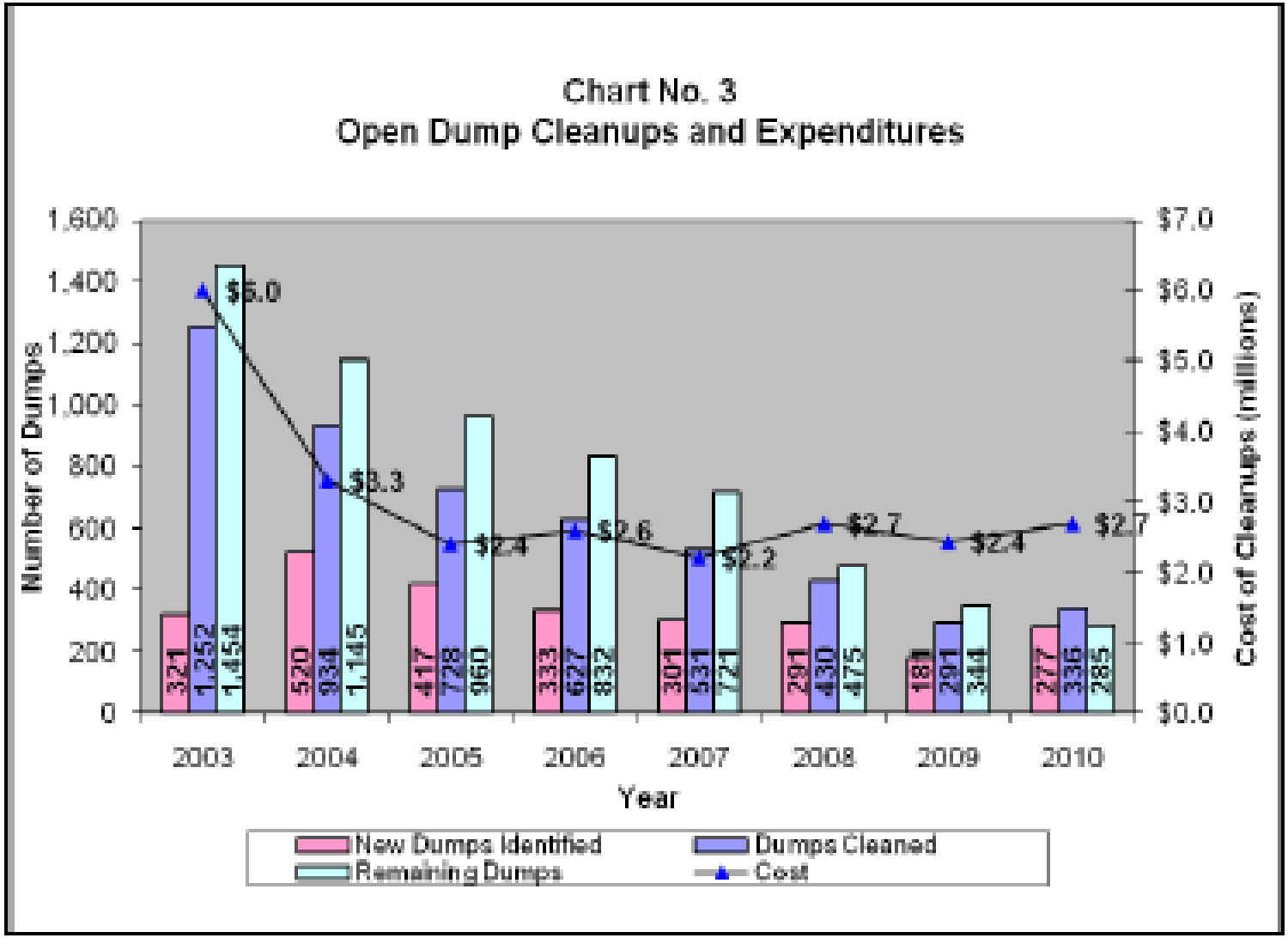


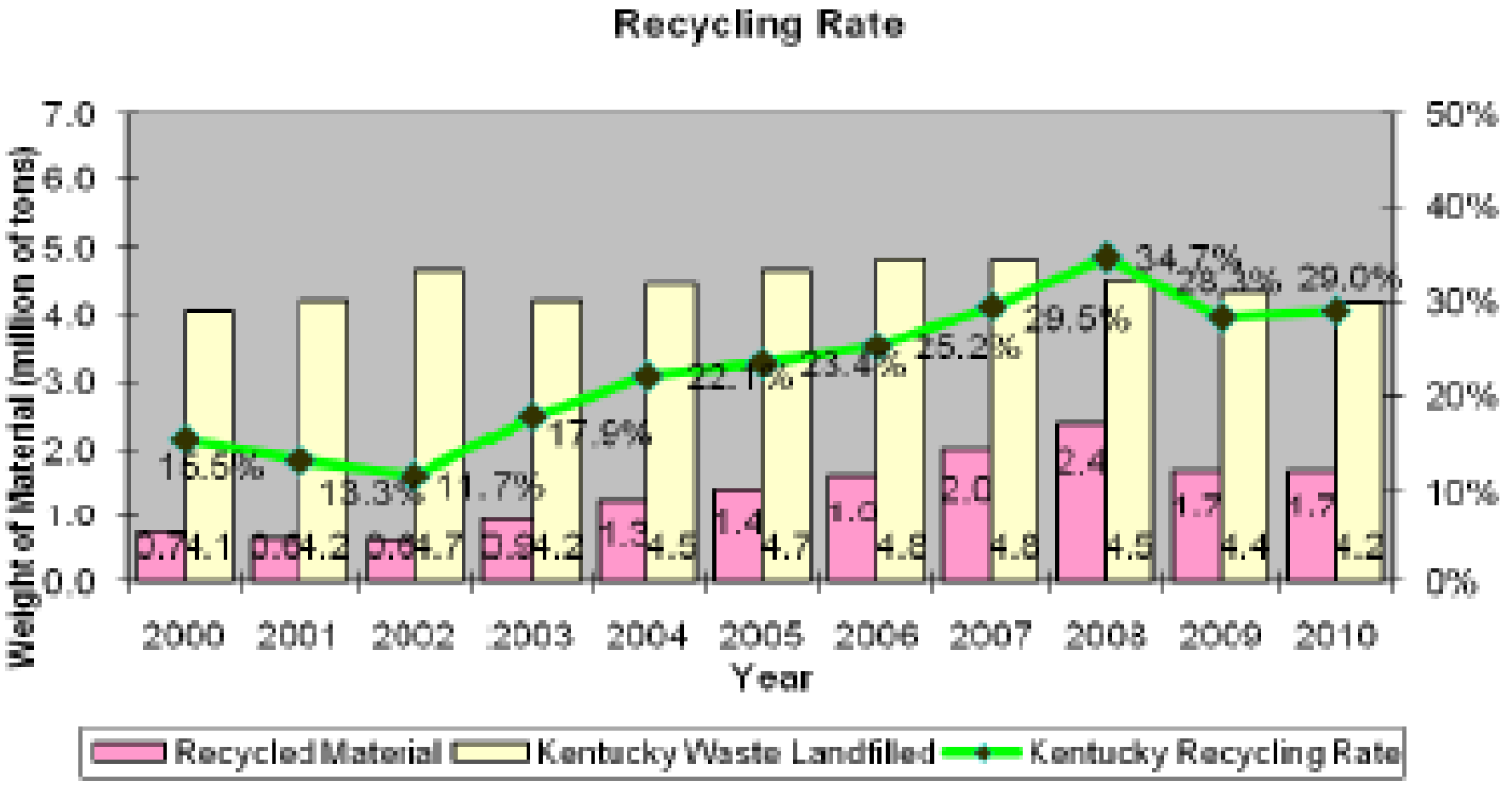
# Air permits – timely processing



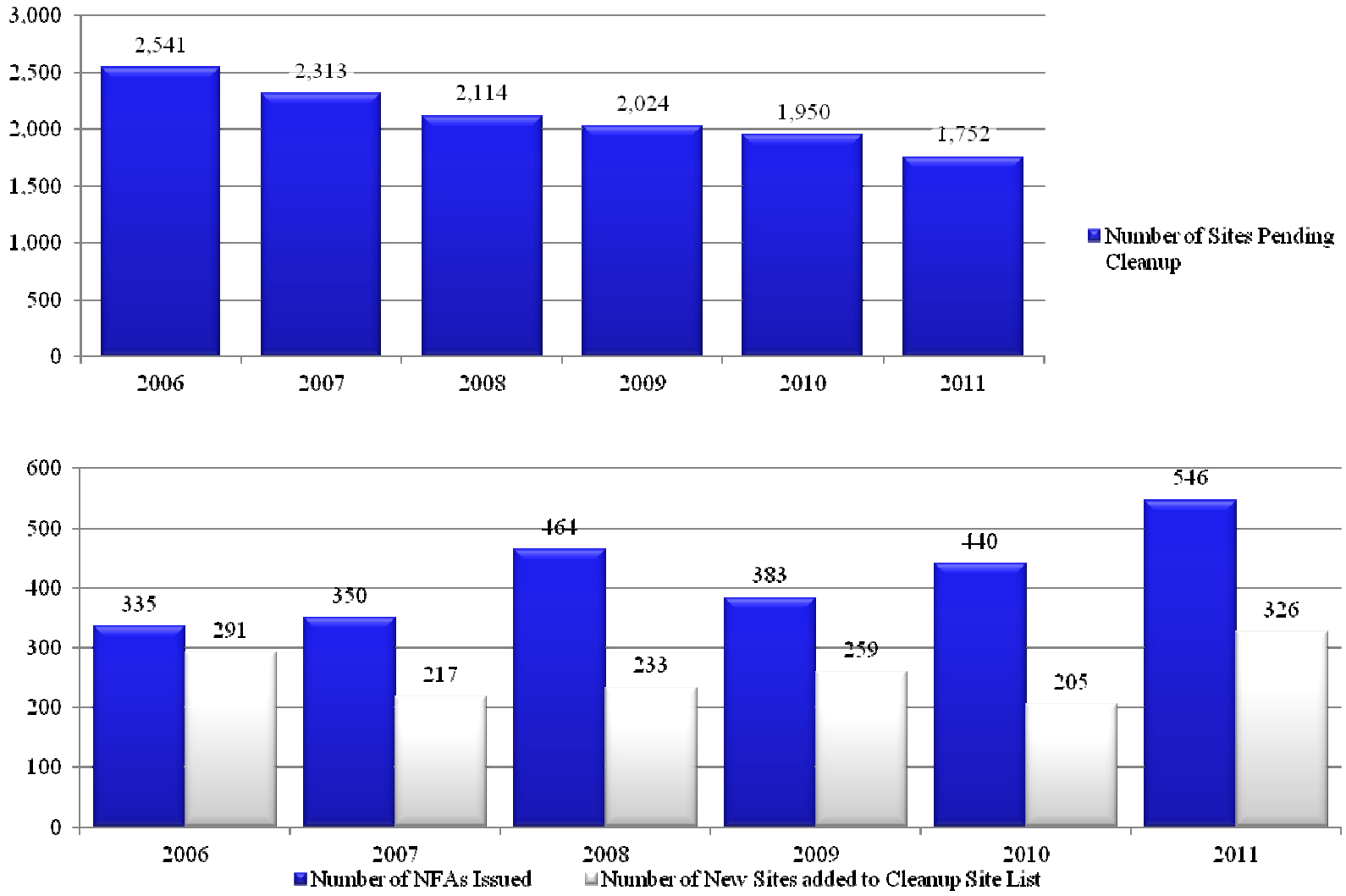
# Elimination of Open Dumps



# Increased Recycling



# UST cleanups – timely completion

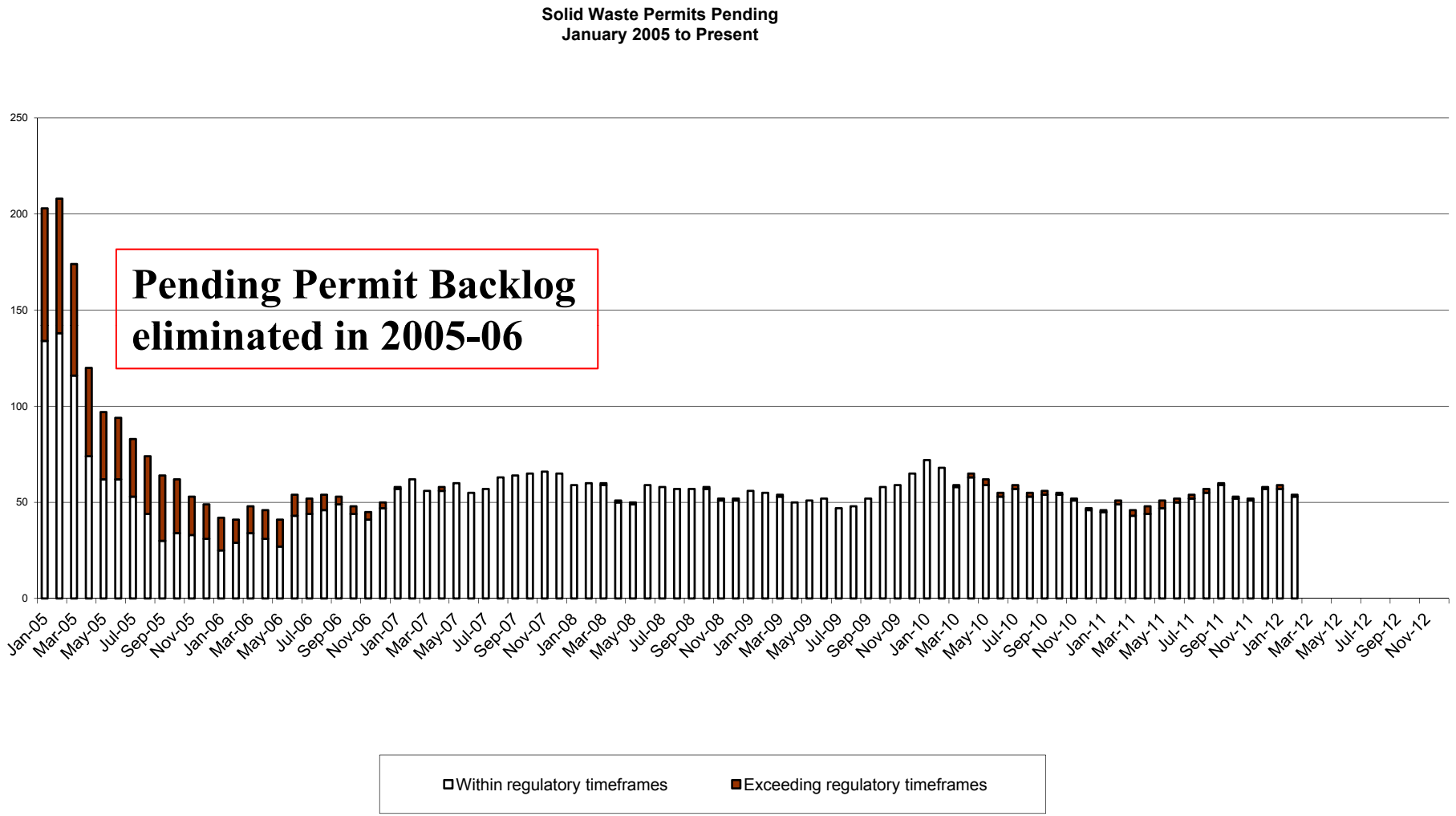


# Brownfield redevelopment – liability relief

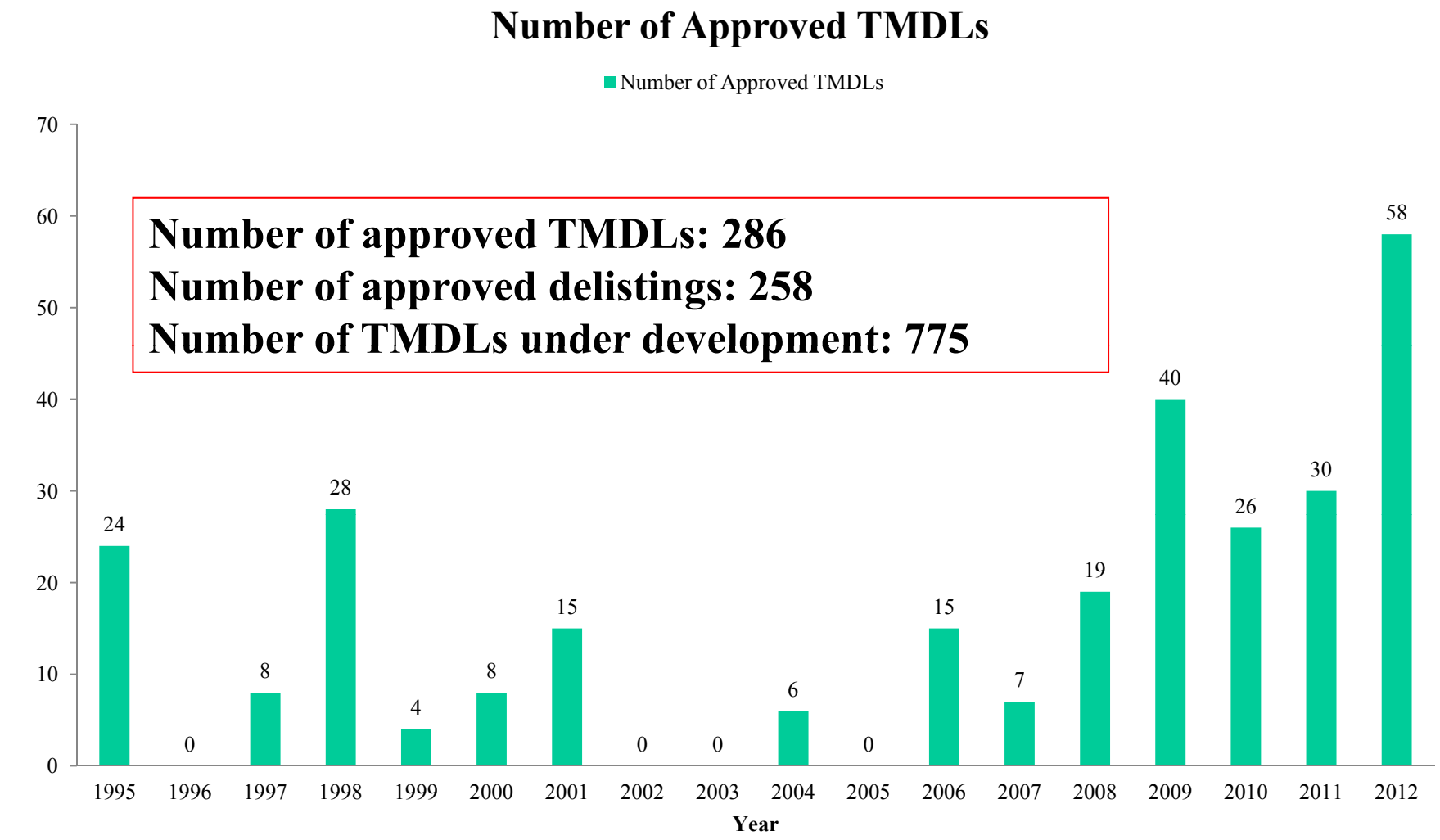
**2011 House Bill 465:**

1) This bill does not change cleanup standards or reduce the responsibility of a person that caused a release
2) The bill removes liability uncertainty for innocent individuals that want to purchase and develop a contaminated property
3) This bill ensures that redevelopment of a contaminated property is protective of the public and the environment
4) This bill will help create jobs and encourage the cleanup and proper management of contaminated properties

# Solid Waste permits – timely processing



# Clean Water Act TMDL Development

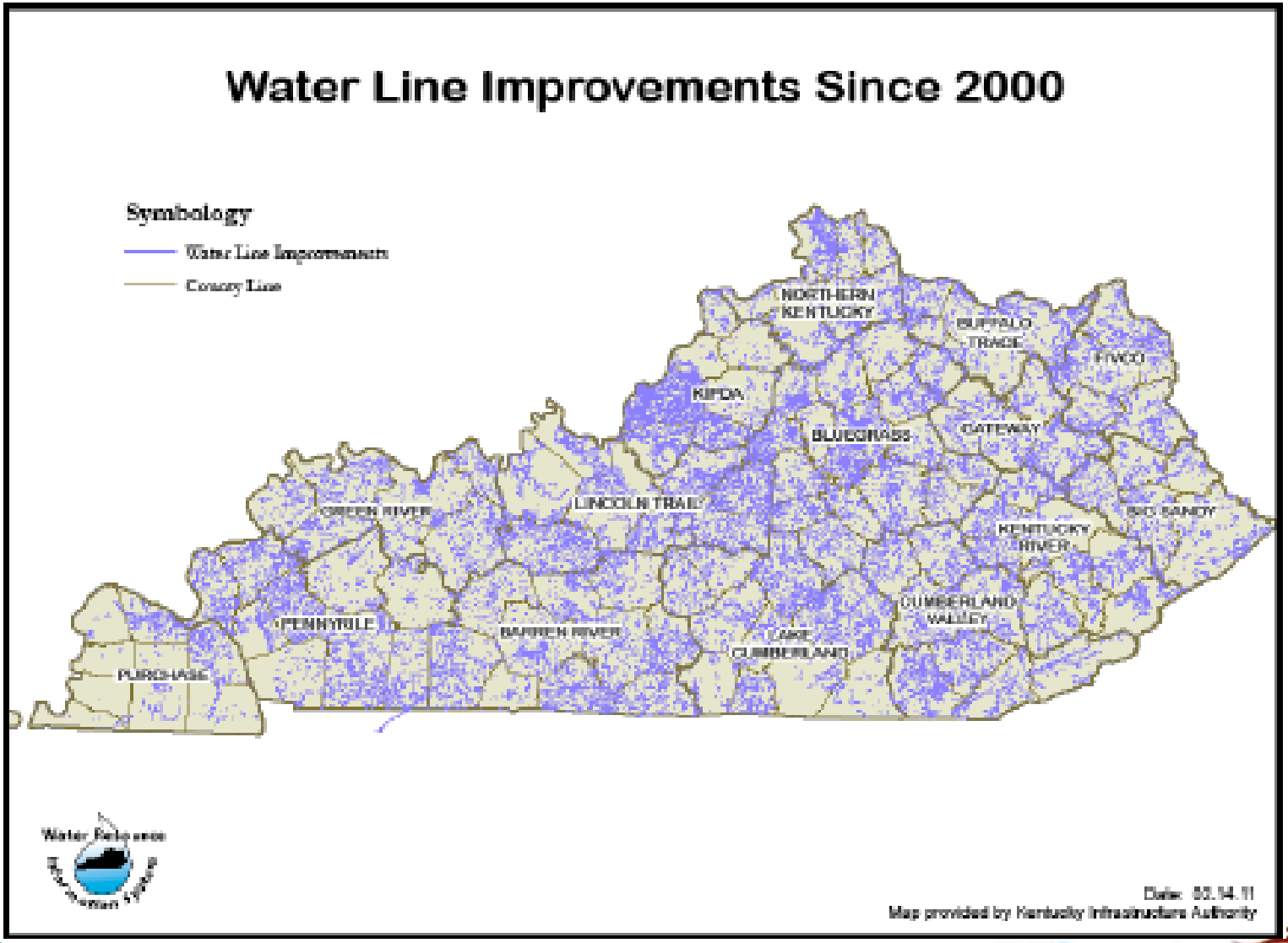


# Approved Antidegradation Procedures

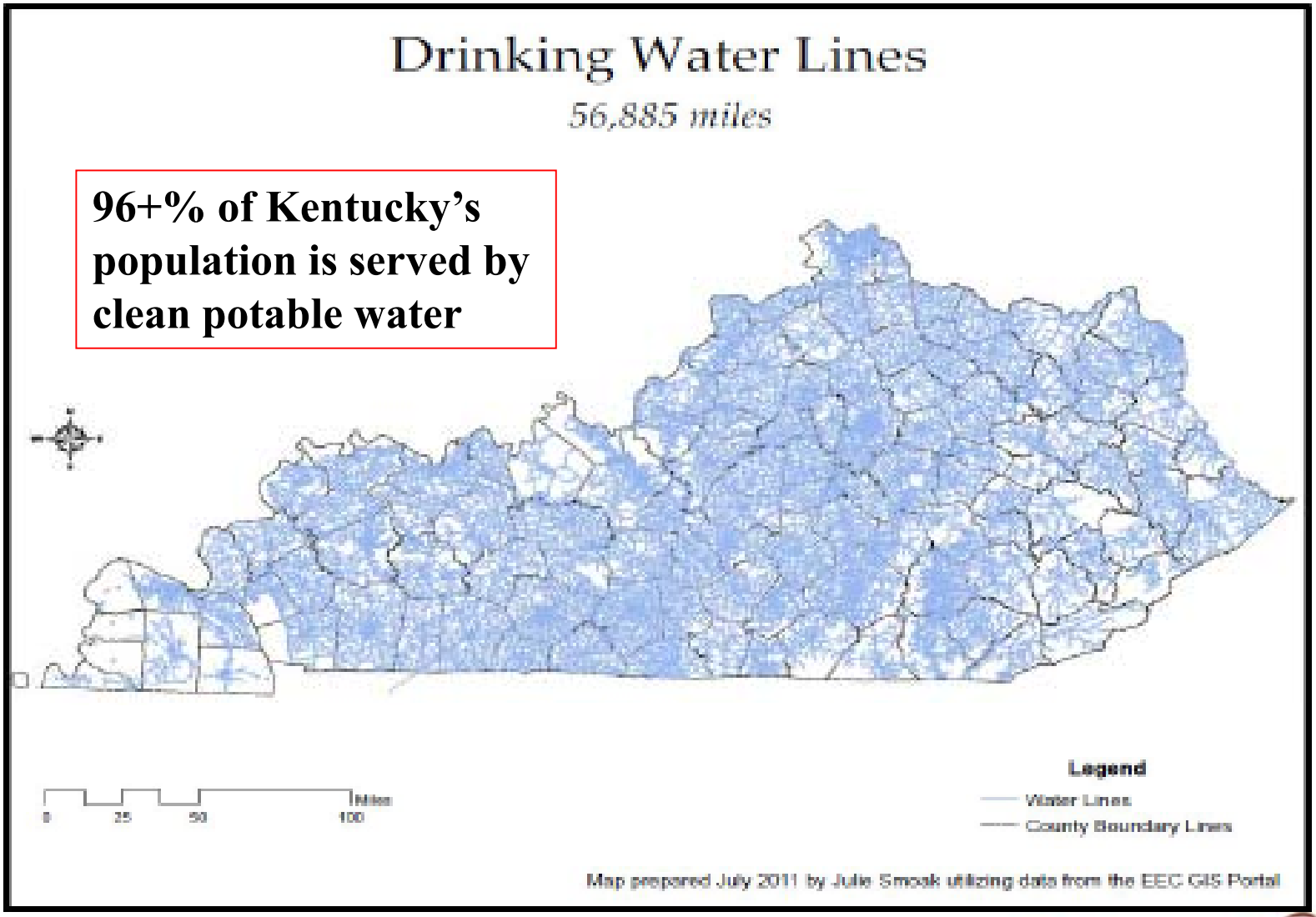
## Antidegradation Implementation Procedures:

- After 16 years of litigation and EPA's evolving perspective on this issue, EPA approved Kentucky's Antidegradation Implementation Policy (401 KAR 10:030) on October 6, 2011.
- KY's procedures and EPA's approval was not challenged

# Drinking Water line improvements since 2000



# Delivery of clean potable water



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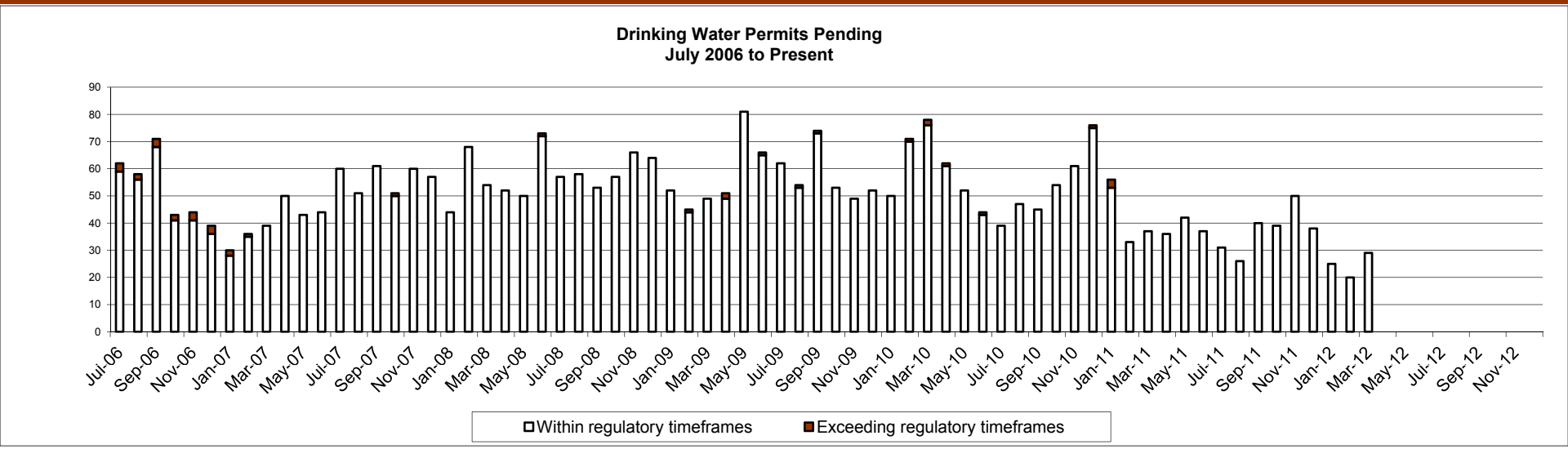
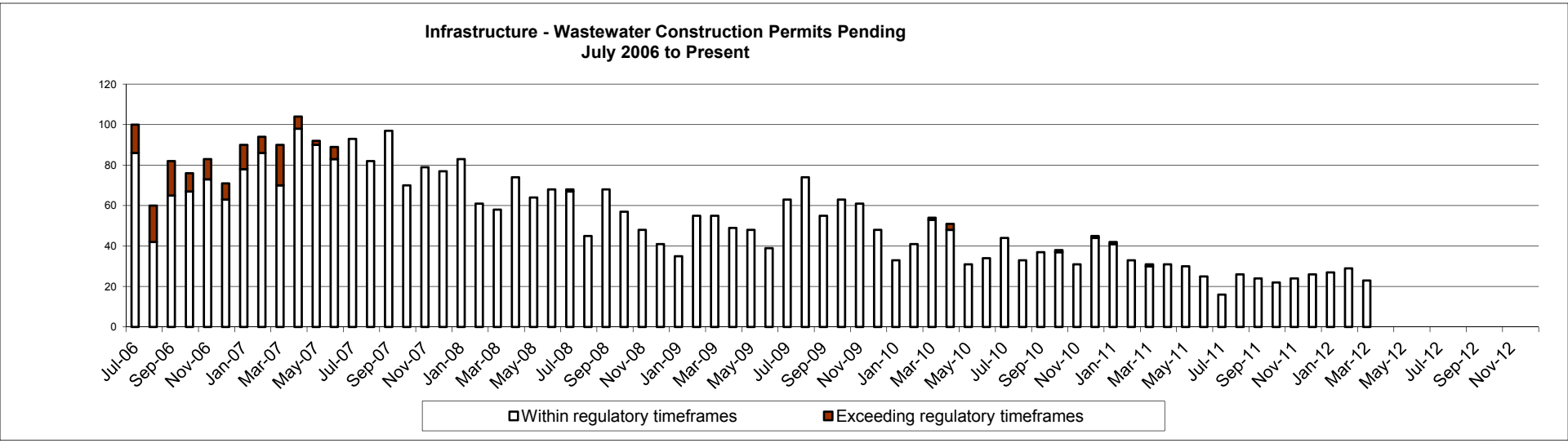
# Water and Sewer permits – timely processing



# INDIANA

# IDEM's Mission

## We Protect Hoosiers and Our Environment

IDEM's mission is to implement federal and state regulations to protect human health and the environment while allowing the environmentally sound operations of industrial, agricultural, commercial and government activities vital to a prosperous economy.

# How Does IDEM Protect Hoosiers and Our Environment?

- Develop regulations and issue permits to restrict discharges to the environment to safe levels.
- Inspect and monitor permitted facilities to ensure compliance with the permits.

# How Does IDEM Protect Hoosiers and Our Environment?

- Use compliance assistance and/or enforcement when people exceed their permit levels or violate regulations.
- Educate people on their environmental responsibilities.

# 25 Years of Progress

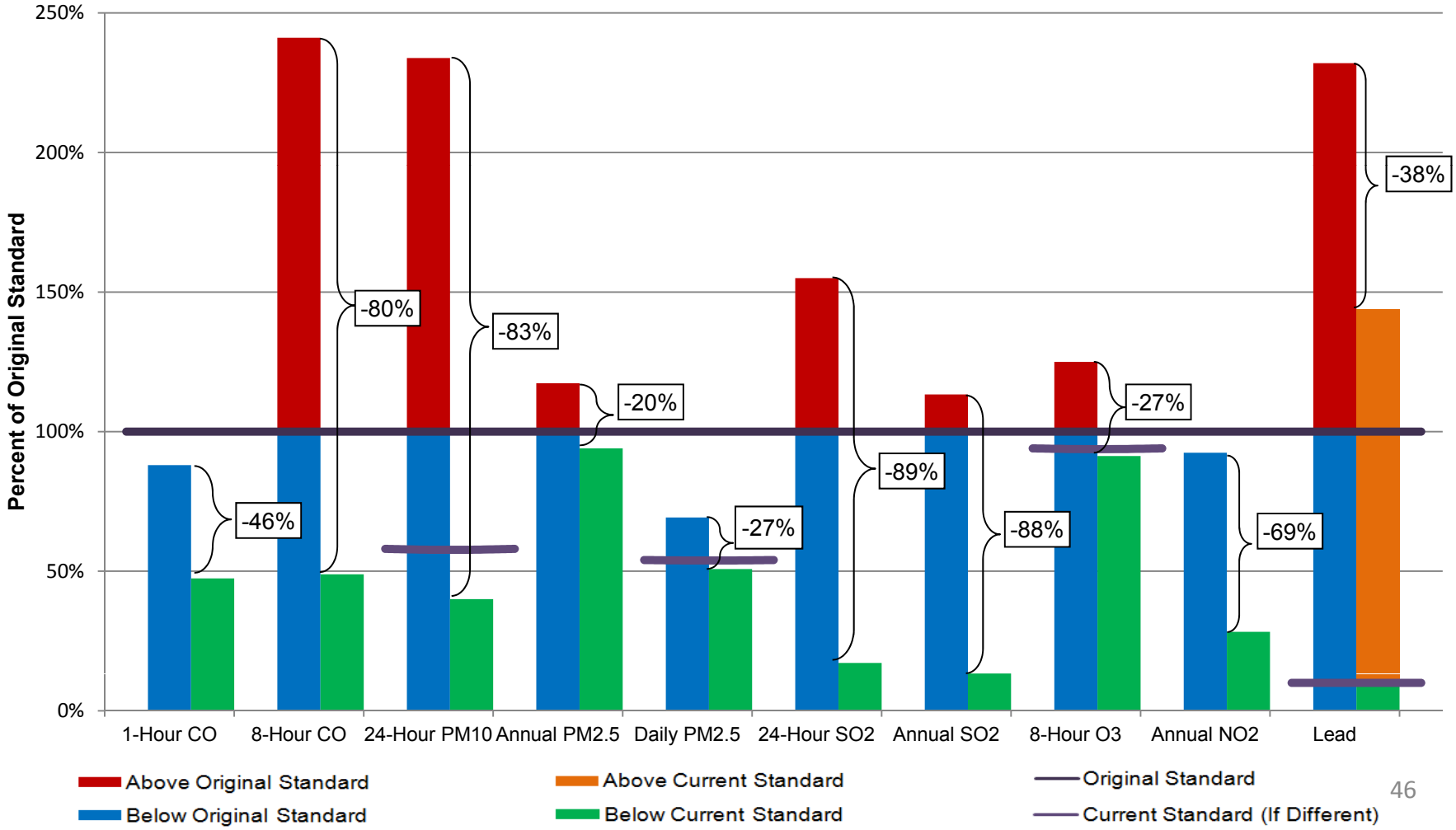
http://www.in.gov/idem/files/state_of_environment_2011.pdf


IDEM
25 Years
Indiana Department of Environmental Management
Air
Land
Water
Pollution Prevention
25th Anniversary
State of the Environment 2011

# 25 Years of Progress

- **Air Quality:**
  - At the end of 2009, for the first time since ambient air quality standards were developed, all of Indiana met all of the health based ambient air quality standards (including the 0.075 ozone standard).
  - During 2010, the new 0.15 microgram per cubic meter lead standard became effective and almost 700 people may be breathing air above that new standard. IDEM is working to make sure that those Hoosiers have clean air to breathe.

## Percent Difference Between Highest Historical Monitored Concentration (Left Bar) and Highest Most Current Monitored Concentration (Right Bar) - Statewide



# 25 Years of Progress

- **Cleanup of Contaminated Sites:**
  - Indiana has a fully funded Excess Liability Trust Fund to pay for petroleum clean ups from currently operated tanks.
  - Indiana will issue an updated RISC Closure Guidance Document this year.
  - Exposure to hazardous constituents is under control at 58 of Indiana's 66 RCRA Corrective Action sites, while Groundwater contamination is under control at 55 of those 66 sites.

# 25 Years of Progress

- **Cleanup of Contaminated Sites:**
  - Since 2005, Indiana has cleaned up more than 2,500,000 illegally dumped waste tires.
  - All 1,269 tons of VX Agent stored at the Newport Chemical Agent Facility since 1969 has been safely destroyed. VX destruction started in May of 2005 and was completed in August 2008.

# 25 Years of Progress

- **Water Quality Improvements:**
  - IDEM has assessed the water quality in 83% of Indiana's waters to identify areas in need of improvement and has updated our Water Quality Monitoring Strategy to increase targeted monitoring.
  - IDEM has used the 319 grant process to fund watershed improvement projects over the past five years that have prevented annual discharges of:
    - 500,508,000 pounds of sediment
    - 546,871 pounds of nitrogen
    - 332,270 pounds of phosphorus

# 25 Years of Progress

- **Water Quality Improvements:**

  IDEM has documented the water quality improvements from these program efforts and removed the watersheds listed on the next page from the list of impaired waters.

# 25 Years of Progress

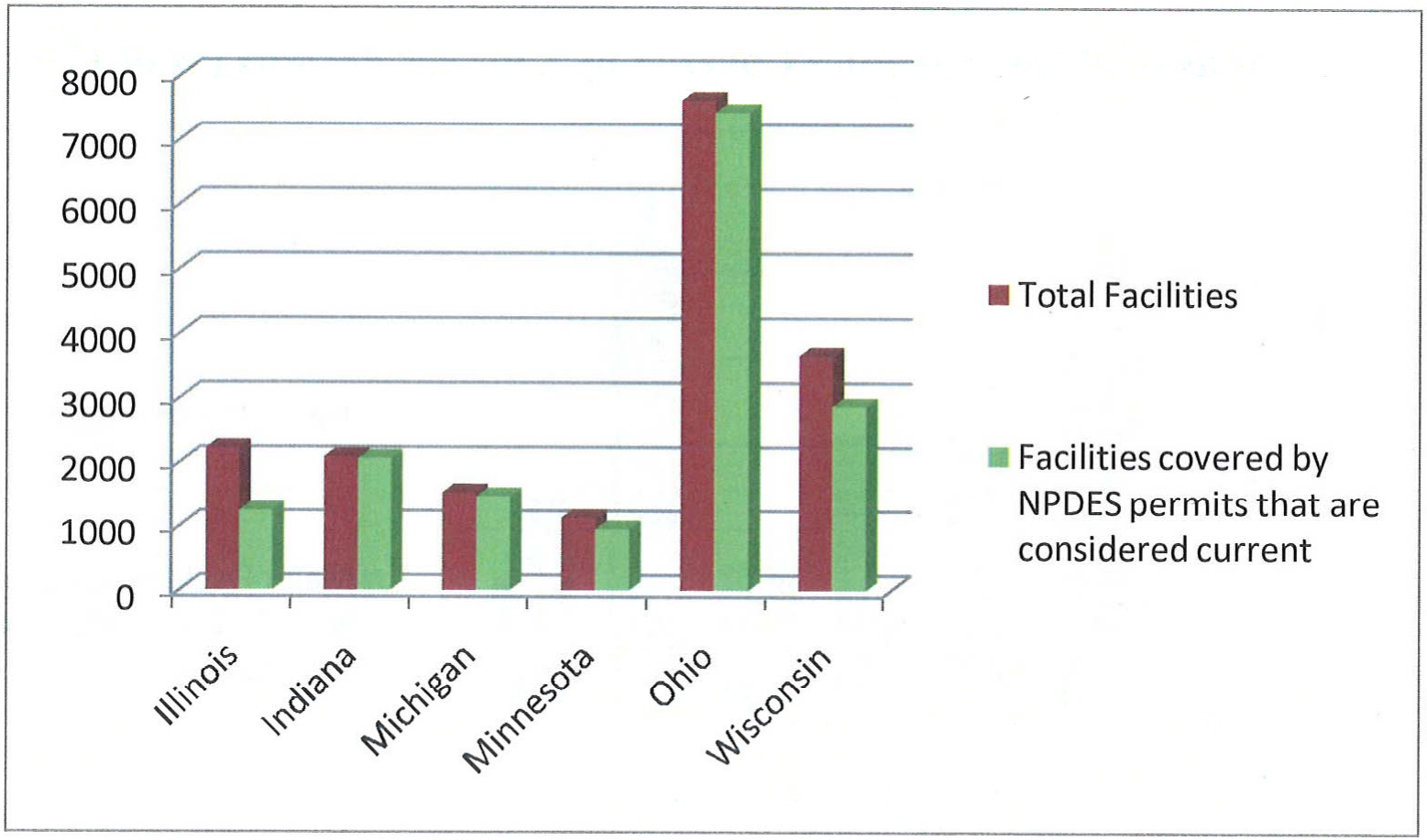
- **Water Quality Improvements:**
- Big Walnut Creek
  http://www.in.gov/idem/nps/files/watershed_success_epa_bigwalnut.pdf
- Clifty Creek
  http://www.in.gov/idem/nps/files/watershed_success_epa_clifty.pdf
- Pigeon Creek
  http://www.in.gov/idem/nps/files/watershed_success_epa_pigeon.pdf
- Bull Run/West Creek
  http://www.in.gov/idem/nps/files/watershed_success_epa_bullrun.pdf

# 25 Years of Progress

- **Administratively extended NPDES permits.**
  - In 2005, there were 263 administratively extended NPDES permits
  - The last backlogged permits were issued in 2011—all permits are current

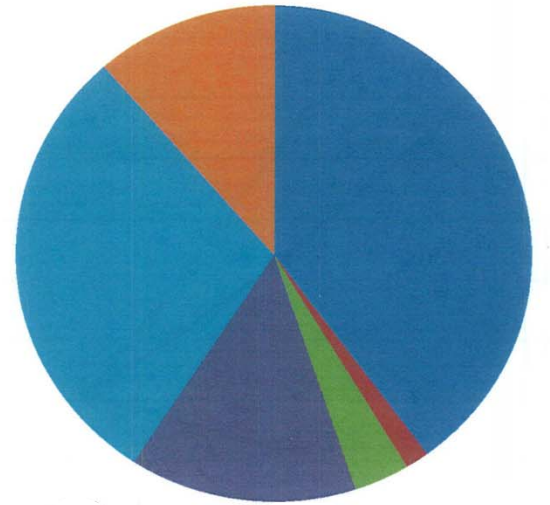
# Comparison of Region 5 States Permitting Program Status compiled by U.S. EPA Region 5 for March 10, 2011 State Environmental Directors Meeting

# Status of Facilities Covered by Current Permits (as of 12/31/10)



# Region 5 Title V Renewal Permit Backlog

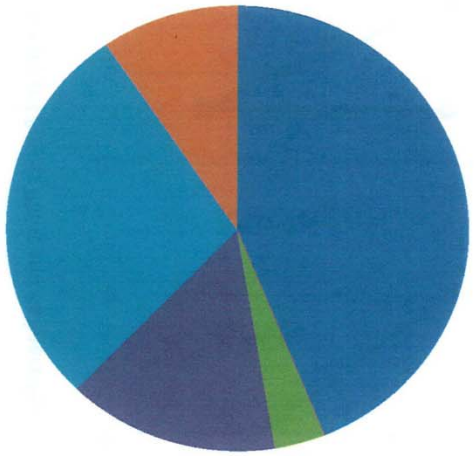
Backlog as of January 1, 2011



(573) Illinois 422
(650) Indiana 16
(385) Michigan 37
Minnesota 151 (295)
Ohio 312 (597)
Wisconsin 122 (467)

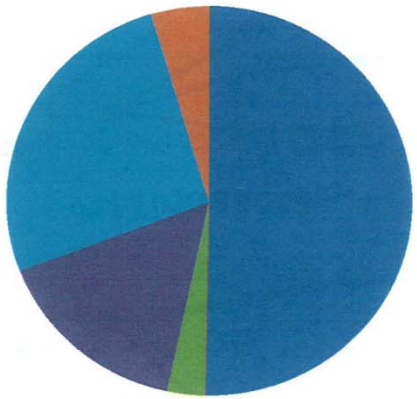
(Total Number of Title V Permits)

End of Calendar Year 2011



Illinois 416
Indiana 0
Michigan 34
Minnesota 141
Ohio 267
Wisconsin 92

End of Calendar Year 2012

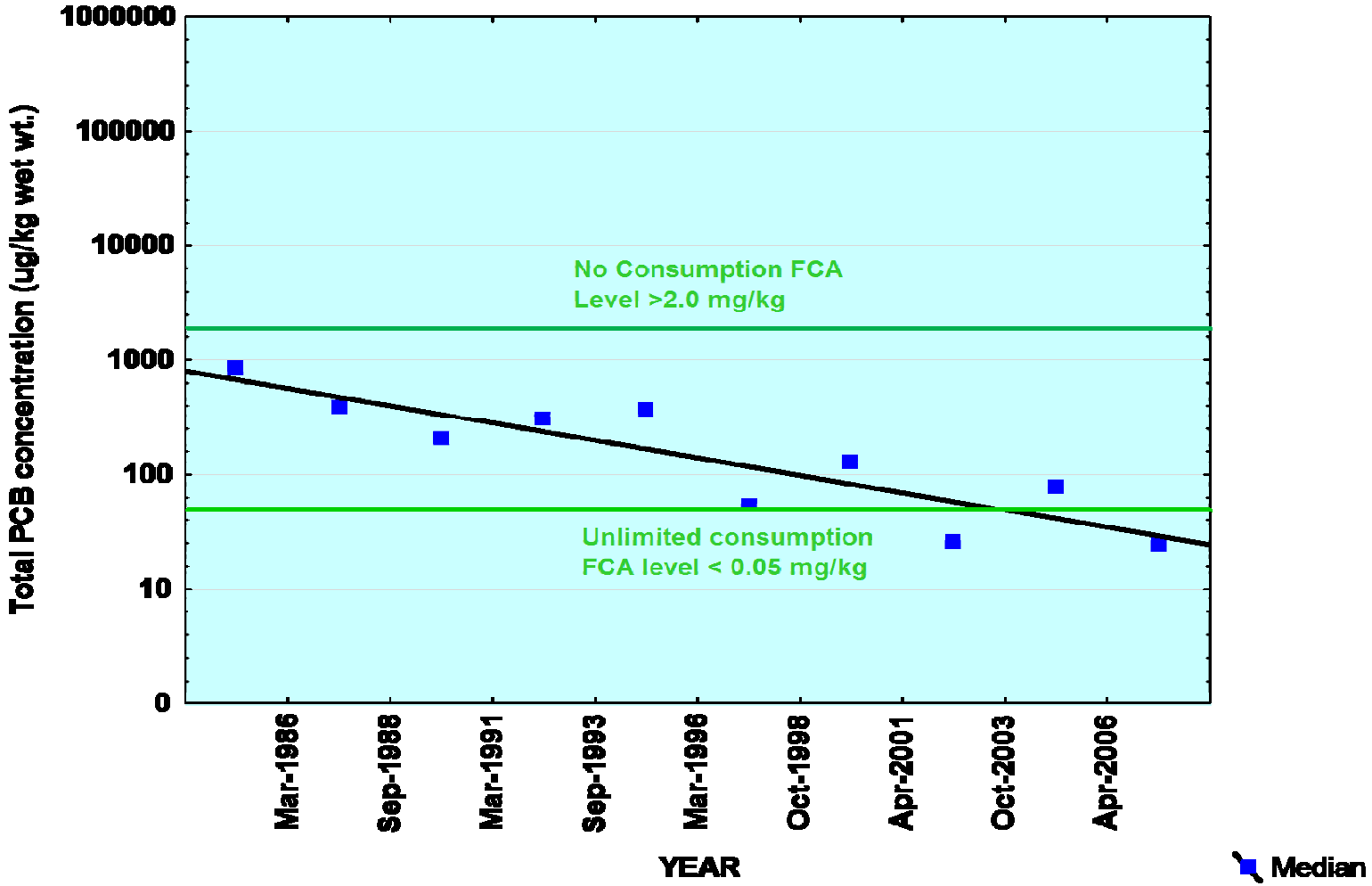


Illinois 398
Indiana 0
Michigan 24
Minnesota 126
Ohio 207
Wisconsin 37

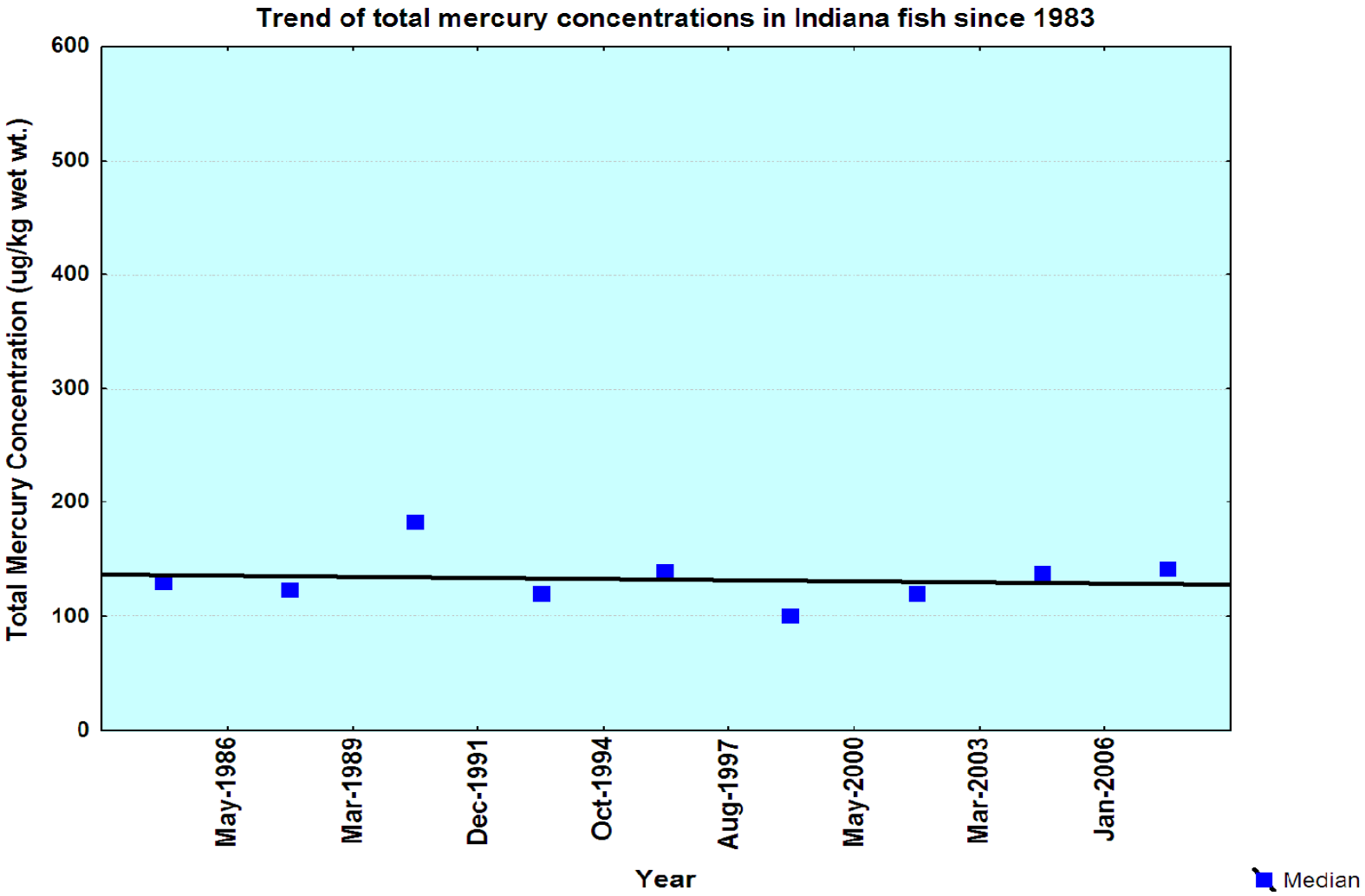
# 25 Years of Progress

- **Water Quality**: Combined Sewer Overflows
  - All 98 State lead CSO Communities and 7 of the 10 Federal lead Communities have entered legal agreements to address their CSO issues.
  - We are working with USEPA to speed the progress on the remaining 3 Federal lead CSO communities.
  - At least 27 of the CSO communities have completed their projects to address the release of untreated sewage during rain events.

## Trend of Total PCB in Indiana Fish 1983-2008



# ENERGY AND AIR QUALITY


Trend of total mercury concentrations in Indiana fish since 1983
Total Mercury Concentration (ug/kg wet wt.)
600
500
400
300
200
100
0
May-1986
Mar-1989
Dec-1991
Oct-1994
Aug-1997
May-2000
Mar-2003
Jan-2006
Year
Median

# Fish Tissue Mercury

- Mercury emissions in Indiana have decreased by approximately 20% over the past 14 years.
- Measured mercury deposition has decreased by 7% during this time.
- In spite of these reductions, there is no apparent change in mercury fish concentrations in Indiana.

# Protection of Human Health

- U.S. EPA's "acceptable" fish mercury levels are 0.3 mg/kg which is 300 ppb.
- While the average fish tissue mercury levels in Indiana have not changed, they are less than one half of this level.
- Indiana has historically called a stream impaired for mercury if a single analytical result (average of 3 fish) exceeded 300 ppb.

# Protection of Human Health

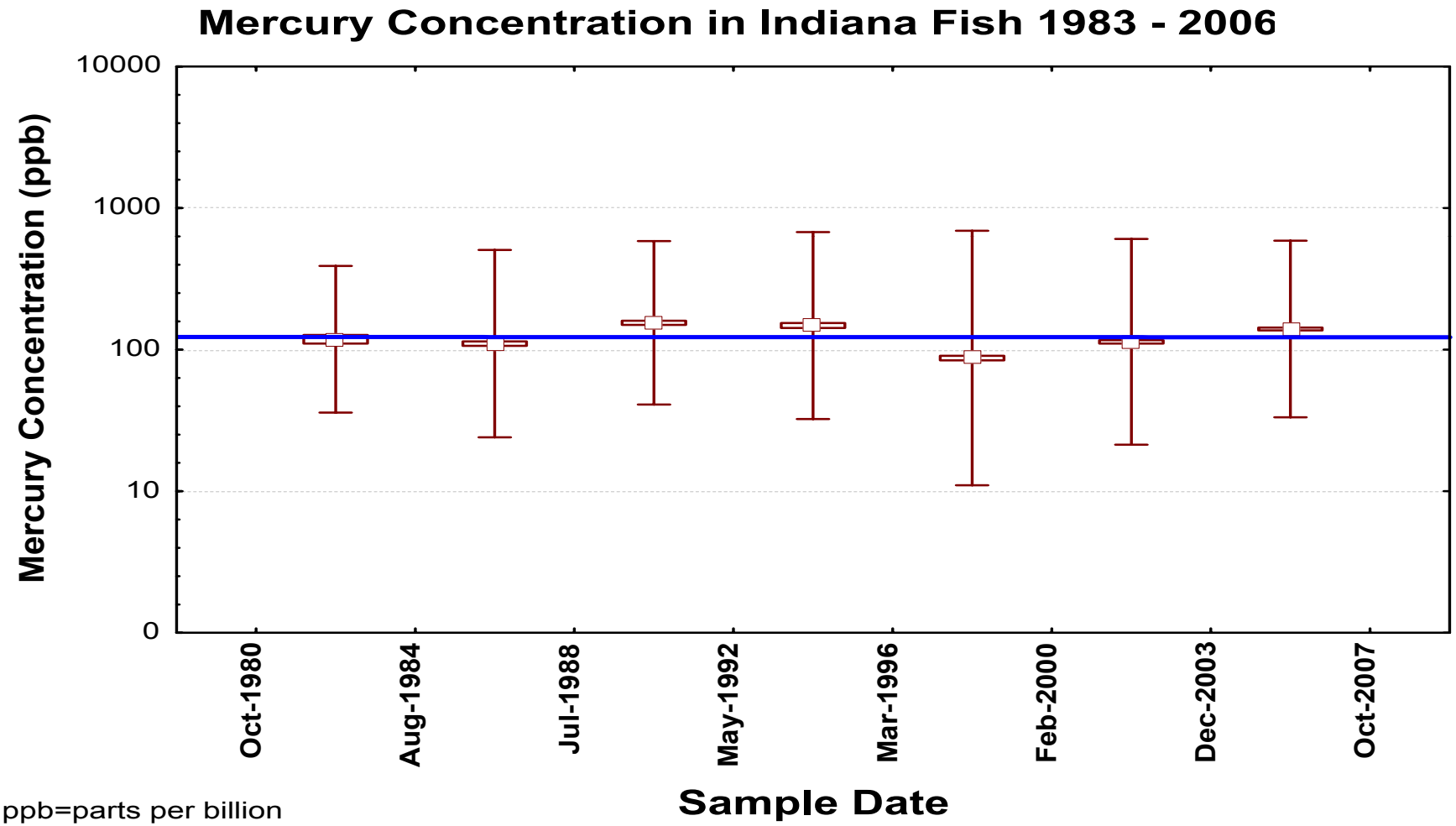
- At the end of 2010, U.S.EPA issued new guidance on the proper interpretation of the fish tissue data.
- U.S.EPA's guidance indicates that a properly calculated average mercury value is the appropriate interpretation of the limit.
- IDEM plans to reevaluate its mercury data using the U.S.EPA guidance.

# Mercury Air Toxics Rule (MATS)

Proposal Published: May 3, 2011

Final Rule Becomes Effective: April 16, 2012

- Annual rule cost $9.6 billion.
- Annual rule HAP benefit $500,000 to $6,000,000 (0.00209 IQ points per exposed person or 510.8 IQ points per year in US out of 31 billion IQ points)
- Rule cost is between $1,600 and $19,200 per $1 of HAP benefit.
- Estimated annual co-benefits $37 to $90 billion.




ppb=parts per billion

# $CO_2$ (Green House Gasses)

The National Academy of Sciences report, "*America's Climate Choices*" recommends that actions be taken now to start reducing U.S. greenhouse gas emissions to levels between 50% and 80% below 1990 levels.

- Achieving an 80% reduction from 1990 levels would require a 81.4% reduction from 2009 levels.
- If we converted all U.S. fossil fuel use from coal and oil to natural gas, we would achieve a 23.9% reduction from 2009 levels.

# $CO_2$ (Green House Gasses)

- The remaining emissions would need to be reduced by 73.8% to reach the 80% target.
- Apparent choices are:
  - Energy conservation.
  - Increasing U.S. non-hydro renewable energy sources from the current 5.5% market share.
  - Carbon sequestration.
  - Nuclear electricity.
- Is it possible to achieve the additional 73.8% reduction?

# Indiana Wind Energy Status

- Indiana has about 1,400 Megawatts of installed wind capacity. This represents about 5% of Indiana's electrical production capacity.
- Because the wind does not blow all of the time, this capacity generates 2.6% of Indiana's total electricity production.
- It will be difficult for current wind technologies to supply more than 10% of our current demand.

# KENTUCKY

# Energy, Coal, and Mining

*To Protect and Enhance Kentucky's Environment*

Kentucky
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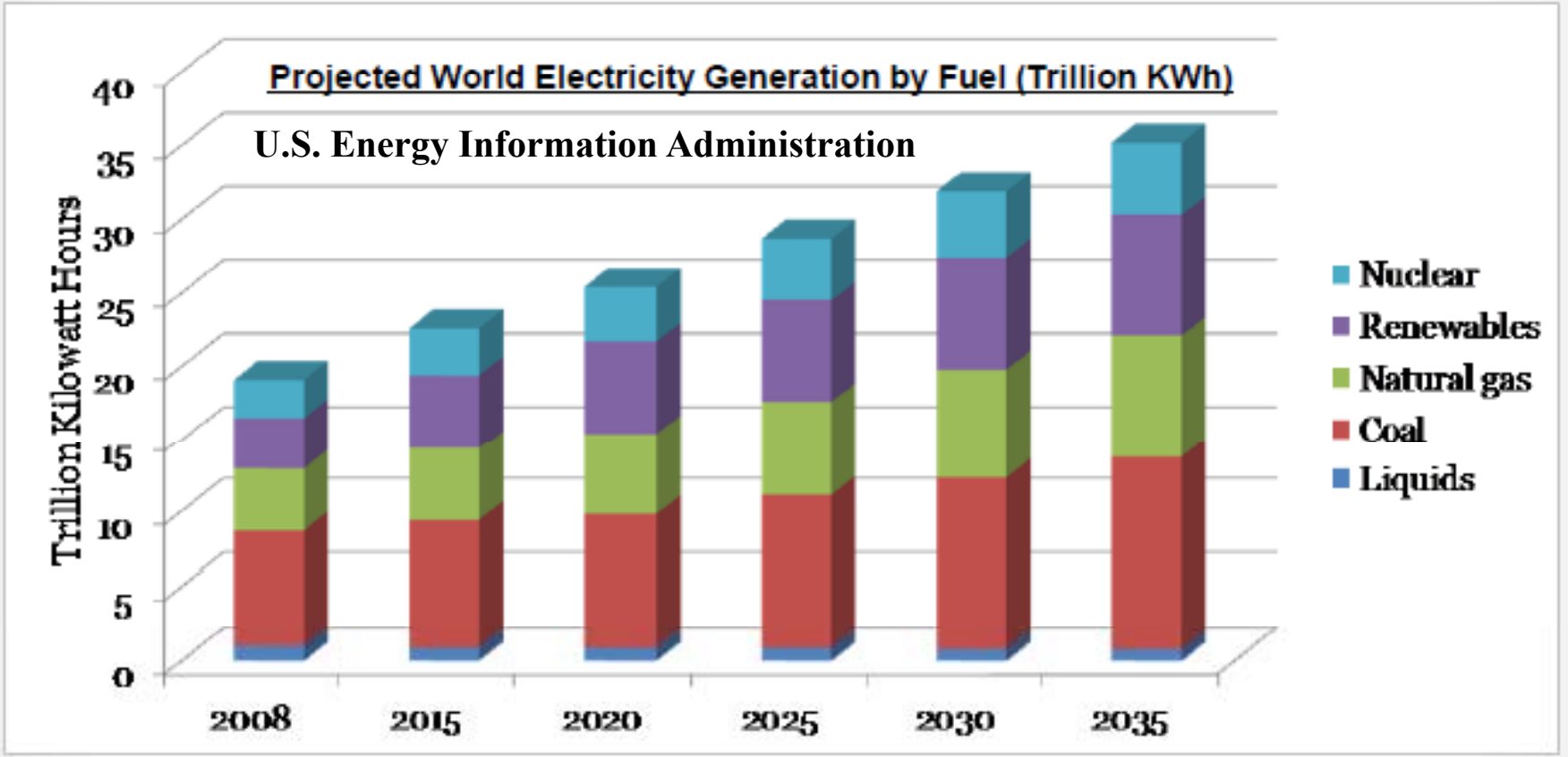
# To coal or not to coal, that is the question.

- Does it matter to you whether we use coal or not – for, against, don't care? Selected issues:
  - Affordable and competitive electricity prices
  - Quality of life
  - U.S. manufacturing productivity
  - Energy reliability
  - Carbon emissions (GHGs)
  - Sustainability & Green energy
  - Regional energy availability
  - Leads to debates about "all of the above" energy policy or picking "winners & losers" energy policy

# (EIA) International Coal Demand

*Coal is the world's fastest growing fuel with the global demand set to generate an additional 7.1 Trillion Kilowatt Hours of Electricity from Coal by 2035*




*Source: EIA, International Outlook 2011*



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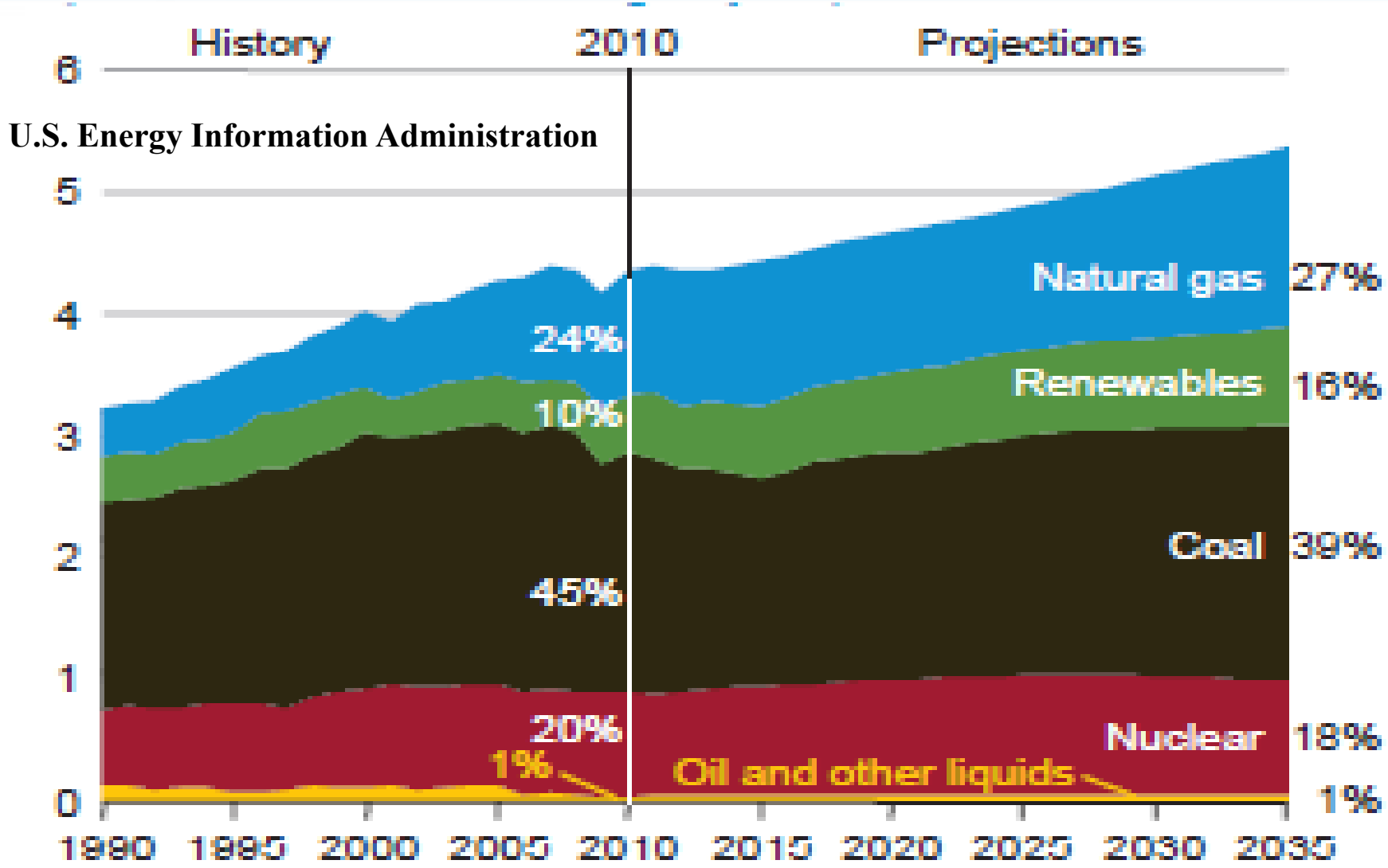
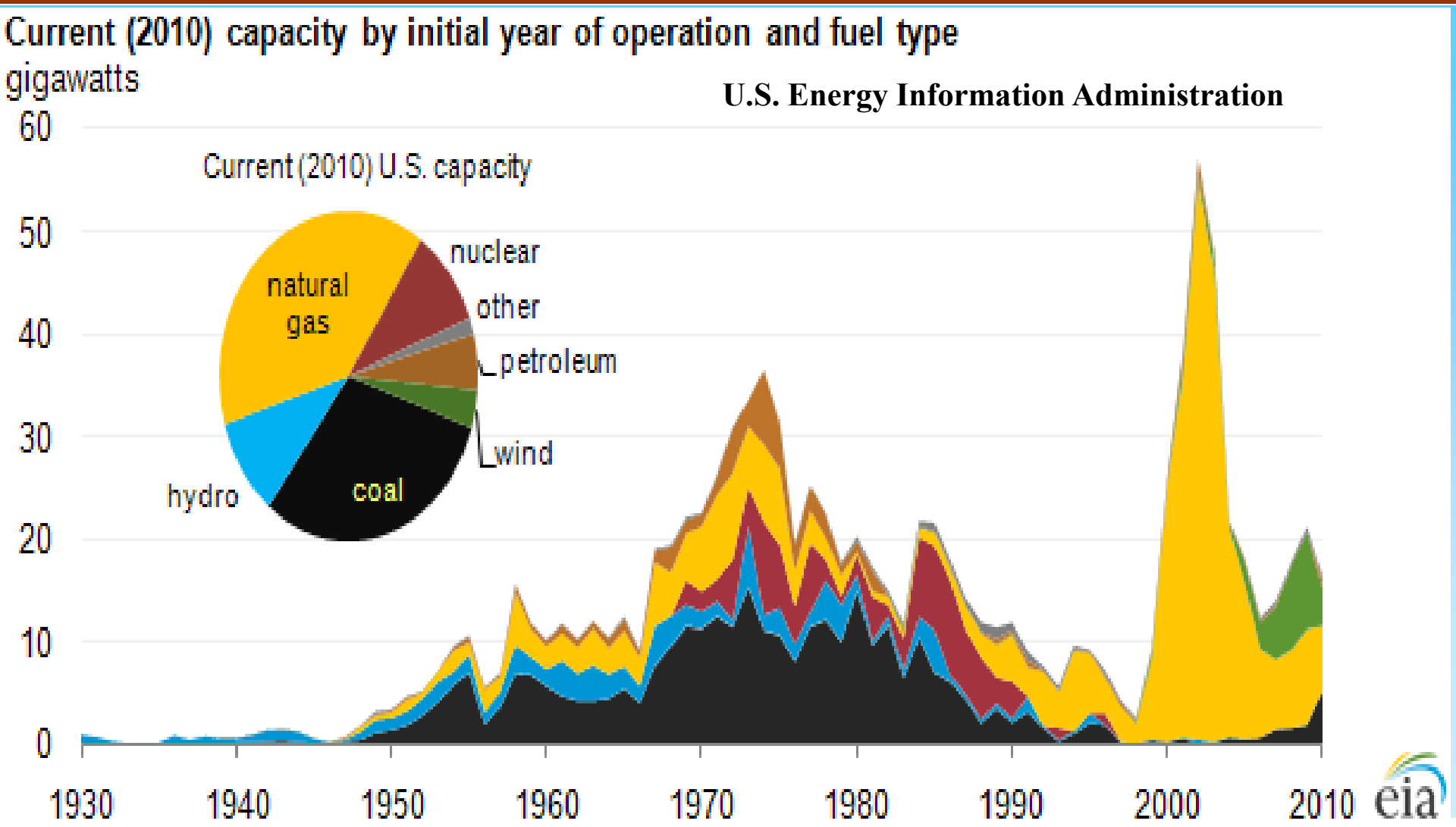
# (EIA) Electricity generation by fuel, 1990-2035 (trillion KW-hours per year)

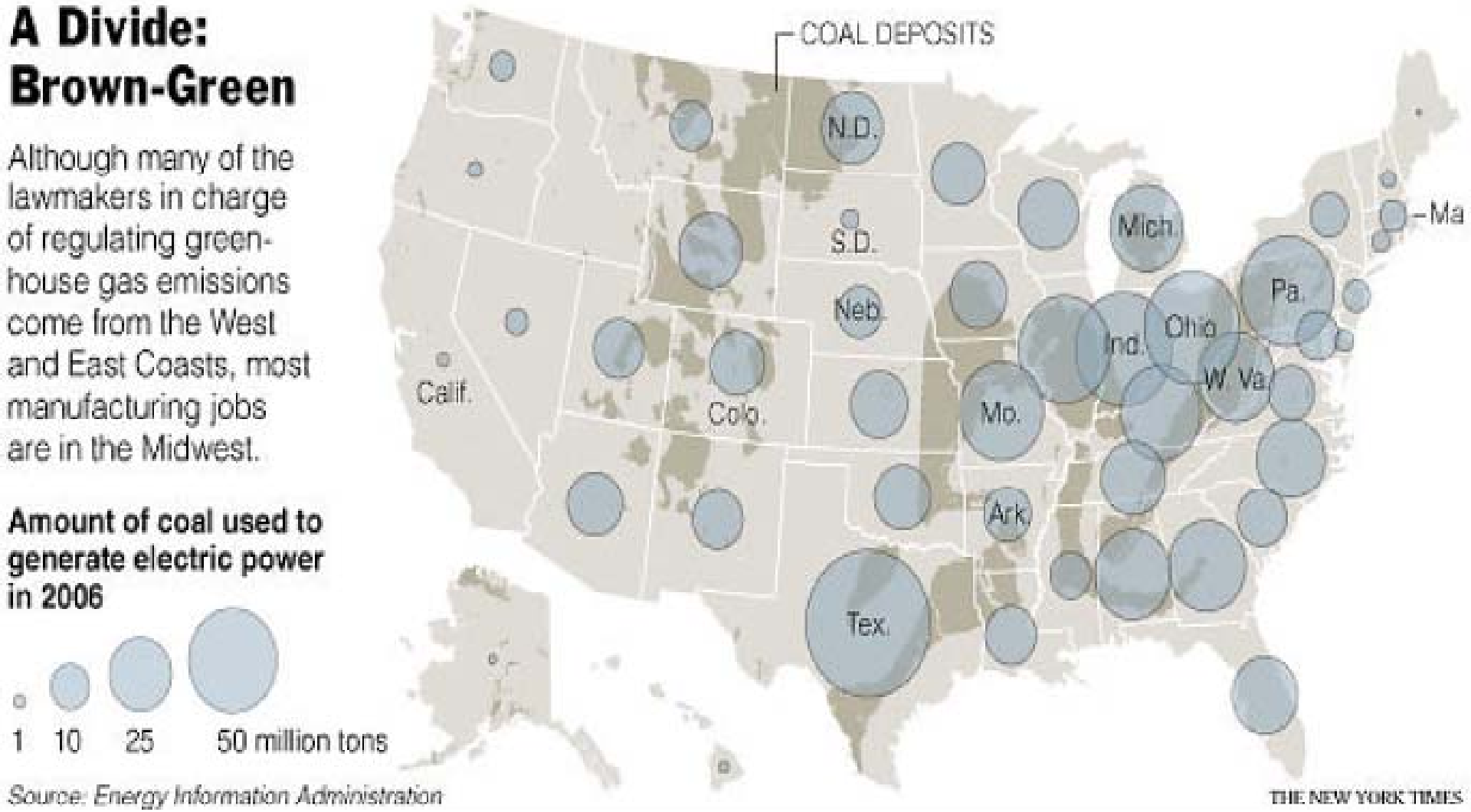


# (EIA) on Age and Capacity of U.S. Energy Sources

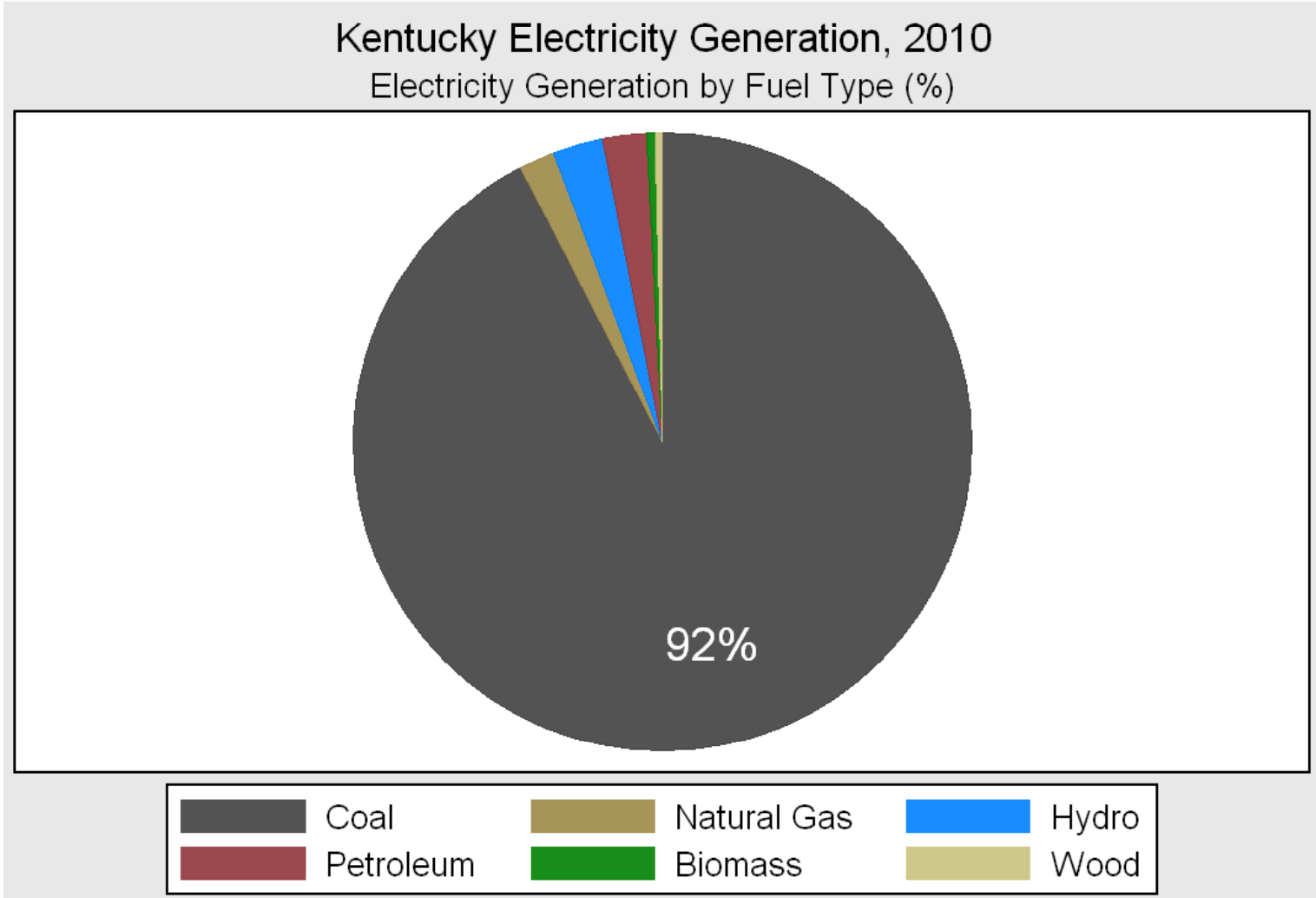



Kentucky
UNBRIDLED SPIRIT

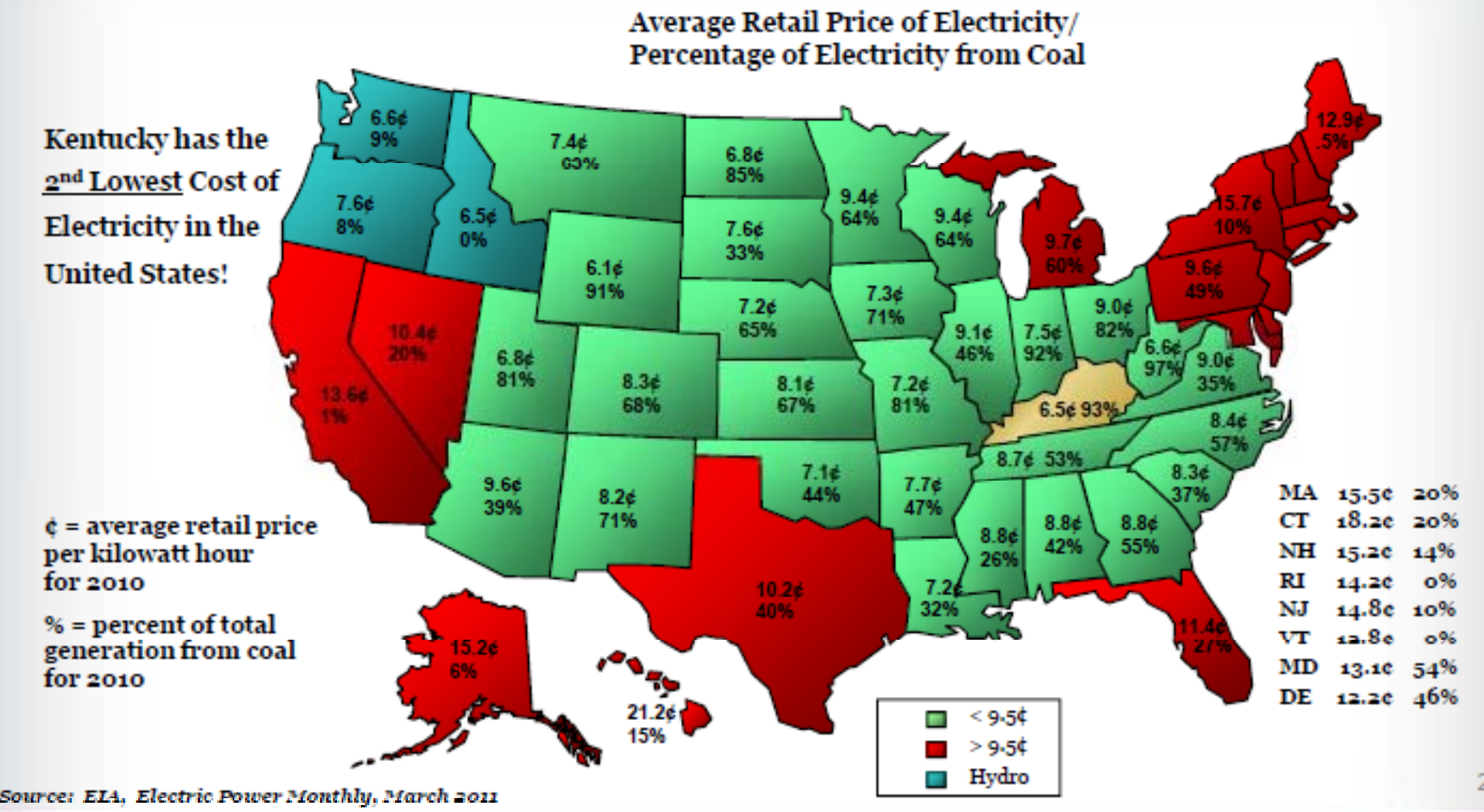
# Regional and Political Debate



# Kentucky Electricity Generation (2010)



# Coal provides low electricity rates in KY



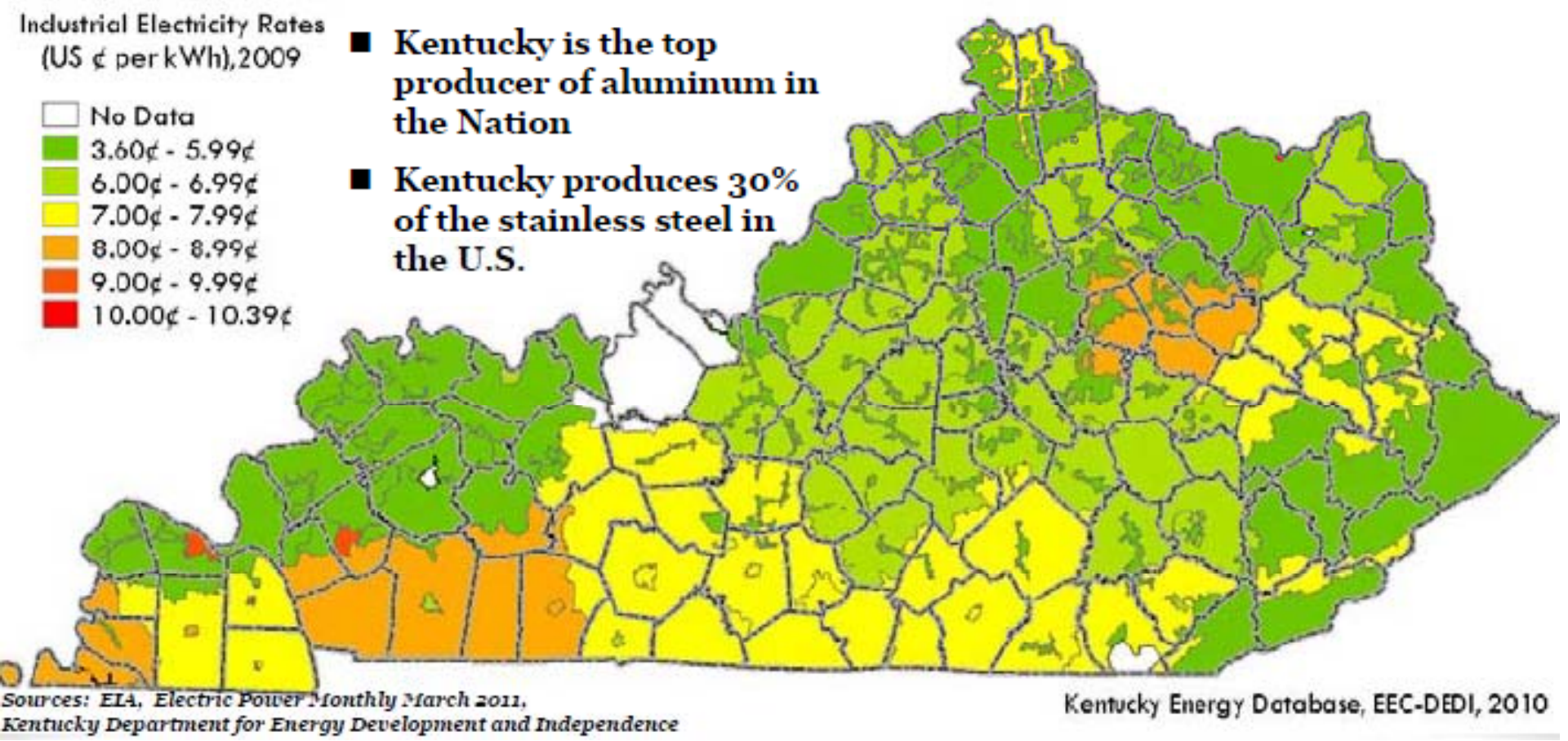

*Source: EIA, Electric Power Monthly, March 2011*



Kentucky UNBRIDLED SPIRIT

# Affordable electricity supports U.S. manufacturing

## Kentucky has the 2nd Lowest Industrial Rate in the U.S., 27% below the national average




*Sources: EIA, Electric Power Monthly March 2011, Kentucky Department for Energy Development and Independence*

Kentucky Energy Database, EEC-DEDI, 2010



Kentucky UNBRIDLED SPIRIT

# Kentucky's 7-Point Energy Strategy (2008)

(1) Improve the energy efficiency of Kentucky's homes, buildings, industries and transportation fleet.

(2) Increase Kentucky's use of renewable energy.

(3) Sustainably grow Kentucky's production of biofuels.

(4) Develop a coal-to-liquids industry in Kentucky to replace petroleum-based liquids.

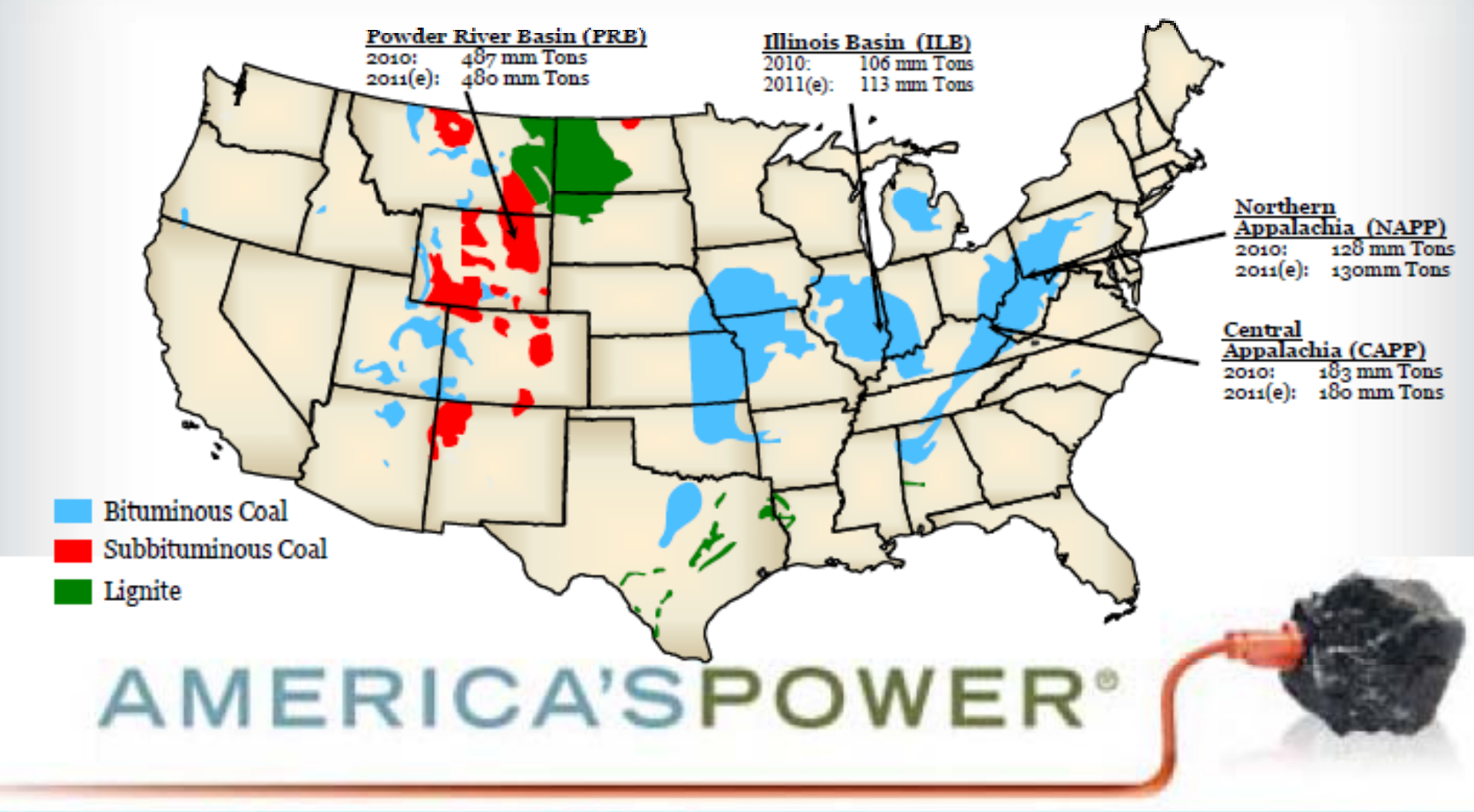
(5) Implement a major and comprehensive effort to increase gas supplies, including coal-to-gas in Kentucky.

(6) Initiate aggressive carbon capture/sequestration projects for coal-generated electricity in Kentucky.

(7) Examine the use of nuclear power for electricity generation in Kentucky.

**Ultimately – regardless the success of the KY Energy Strategy coal will remain the primary source of energy in Kentucky for the short and long-term future.**

# Coal mining in the U.S. today




*Source: EIA, Annual Coal Report, Short Term Energy Outlook, November 2011*



Kentucky UNBRIDLED SPIRIT

# Federal EPA CWA – coal mining

f) **Appalachian coal mining "guidance".**

i. New "**final interim guidance**" was issued **April 1, 2010**. Seeks to establish new CWA 402, 404, and SMCRA requirements.

ii. EPA Region 4 objected to 21 draft CWA 402 Individual Permits (IPs) for Eastern KY surface mining operations in Sept./Oct. 2010. These objections remain pending with EPA.

**iii. Final Appalachian surface coal mining guidance** issued by EPA on **July 21, 2011.**

iv. Final guidance cites a conductivity benchmark of 300 to 500 µs/cm., but limits the applicability of the benchmark consideration to only Kentucky and West Virginia.

v. EPA Region 4 objected to 19 draft CWA 402 Individual Permits (IPs) for Eastern KY surface mining operations in Sept. 2011, for a total of 40 permit objections. All of these objections remain pending with EPA.

vi. No proposed CWA 402 permits for Eastern KY (Appalachian) new or expanded surface mining operations have been issued since April 2010 as a result of EPA's oversight objections via the use of EPA guidance.

# The right balance

Our energy future should be determined by finding the appropriate balance:

- **ENERGY—** We must not sacrifice energy reliability, the cornerstone of our nation's growth.
- **ENVIRONMENT—** We can and must use our energy resources in an environmentally responsible manner.
- **ECONOMY—** We should not pick energy winners at the expense of losers, and energy affordability must be at the forefront of policy discussions for economic development.

# IMPACTS OF NEW OIL AND GAS TECHNOLOGIES

Ohio Environmental Protection Agency

# Marcellus/Utica Shale

Ohio Environmental Protection Agency

# Marcellus/Utica Shale Gas

- Setting the Stage for Getting Things Right in Ohio
- Cabinet-level team under Governor Kasich
- Developing strong regulatory framework
- Community outreach and focus on local impacts

Ohio Environmental Protection Agency

# Regulatory Frame Work

- **Intra-agency coordination**
- **Address**
  1. **Local impacts (i.e., roads and tax)**
  2. **Siting and construction requirements (Pad and gathering lines)**
  3. **Operational Requirements**
  4. **Regulate permitting requirements**
     - **401/404**
     - **Well and pad construction**
     - **Surrounding drinking and surface water impacts**
     - **Air impacts**
     - **Solid waste disposal**
     - **Water withdraw and wastewater disposal**
     - **C-R-T-K**
     - **Emergency Response**

Ohio Environmental Protection Agency

# S.B. 165 ODNR Primacy

## Cabinet-level team under Governor Kasich

- ODNR
- OEPA
- PUCO
- ODH
- Taxation
- Commerce and State Fire Marshall

Ohio Environmental Protection Agency

# Energy Pillars

- Shale
- Generation
- Electricity Transmission and Distribution
- Workforce/Training
- CNG Alternative Fuels
- Cogeneration
- Energy Efficiency
- Renewables
- Regulatory Reform

Ohio Environmental Protection Agency

# Renewable Energy

Under SB 221 (and ORC 4928.64), utilities and electric services companies are required to secure a portion of their electricity supplies from alternative energy resources.

Ohio Environmental Protection Agency

# Renewable Energy

By the year 2025, 25% of the electricity sold by each utility or electric services company within Ohio must be generated from alternative energy sources.

- At least 12.5% must be generated from renewable energy resources, including wind, hydro, biomass and at least 0.5% solar.
- The remainder can be generated from advanced energy resources, including nuclear, clean coal and certain types of fuel cells.
- In addition, at least one half of the renewable energy used must be generated at facilities located in Ohio.